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THERE is a prospect of serious trouble in the building-world of Boston. Every member of that world knows that buildings are often erected in violation of the building-laws, by the simple process of making the plans and specifications to conform to the law, taking out a permit in pursuance of them, and then carrying out the structure without regard to the approved plans, or making such alterations as to constitute violations of the law. The force of inspectors in the city is very small, and no vigilance on their part can wholly prevent this sort of evasion of the statutes, although the Department, which is quite aware of the evil, is particularly strict in looking after such cases. After the building is finished, the owners generally think themselves safe from harm, but Mayor Quincy, who is a firm believer in the doctrine that laws are made to be executed, is said to have determined to prosecute violations of the statute in completed buildings; and, with the assistance of the inspectors of the Building Department, who have reported something like one hundred and fifty cases of the kind, to be preparing for energetic proceedings. The principal difficulty about the matter is that the worst offenders are irresponsible speculators, who engage in extensive building-operations on a very small capital, borrowing the necessary money on first, second and often third mortgages, at rates of interest proportionate to the risk. As their chance of profit lies in building cheaply, their interest is to evade the law wherever obedience to it is more expensive than disobedience. In any case, their equity is very small. A certain builder is said to have bought land, and put up houses, in one operation, to the value of something like four hundred thousand dollars, on a capital of five hundred dollars. To such a man, the loss of his share of the investment is not very serious. The builders of this class, if complaint is made against them for violation of the law, usually transfer their title to some friend, and then explain that, having sold the property, they have no further liability in connection with it. If the complaint should be pressed, and the alteration of the building to comply with the law enforced, the owner, if the alteration promises to be too expensive for his means, has simply to abandon the property to the mortgagees, go through bankruptcy, and start on a fresh speculation; while the holders of the junior mortgages may find themselves confronted with the alternative of spending a large amount of money, on which they are unlikely to get any return, or of losing their investment entirely. For this reason, it is proposed by people interested in lending money for the improvement of real estate, to have their mortgages drawn in future with a clause providing that the buildings to be erected with their money shall comply with the law, and

making non-compliance a breach of the mortgage agreement. This would enable the mortgagee to refuse to make payments until it should be definitely ascertained that the work complied with the statute, and would entitle him to foreclose at once on proof of non-compliance. Whether this plan will be adopted remains to be seen, but there would be some difficulties in the way of reducing it to practice; and, meanwhile, some of the people with whose money building has been done within the past three years are likely to suffer both inconvenience and loss.

THE way in which political movements affect, to a greater or less extent, every citizen's affairs is strikingly shown in a quiet suggestion, made by a committee of the National Association of Master Builders, that it might be well for the approaching Convention of the Association to discuss the propriety of amending the Uniform Contract, so as to have it provide that all payments under it shall be made "in gold coin of the United States, of the present standard of weight and fineness." Thousands of leases, mortgages and promissory notes, particularly in the West, now contain this stipulation. It is said that the salmon-canneries of the Pacific Coast, in making contracts for the delivery, next October, of this season's fish, require their customers to agree to make payment in standard gold coin; and, if this is a proper precaution for the salmon-fishers to take against financial perturbations two months hence, the builders, whose contracts usually extend over a period of at least a year, and often much more, could certainly not be accused of a lack of patriotism if they should decide to make provision in a similar way for fixing the value of the money to be paid them for their work and materials. In fact, with a powerful political party committed to the plan of raising prices by increasing the quantity of money in circulation, it is obvious that builders, who, as the work on their contracts goes on, would find themselves, under the operation of this plan, compelled to pay constantly higher wages, and higher prices for their materials, while, at the completion of their agreement, they would receive only the sum agreed upon in conformity with the low scale of prices current a year or more previously, will invite speedy ruin unless they can devise some way of assuring themselves that the value of the price to be paid for their work and materials will bear nearly the same relation to the cost of such work and materials at the completion of the contract that it did at the beginning; and in providing for such assurance, by specifying the standard of value on which the contract shall be based, they simply put themselves on an equality with the retail merchant, who, in buying from week to week at advancing prices, reimburses himself immediately by increasing his own prices, or with the working-man, who, as the cost of living increases, demands higher wages to enable himself to pay it.

ANOTHER reason in favor of prudent action by the associated builders at this time is to be found in the fact that they are not only more exposed than any other people to the losses incident to variations in the standard of value during the period required for the fulfilment of their contracts, but that the introduction of "Mexican prices" would probably lead to a great deal of building. The change from gold prices to Mexican prices would be gradual, as it would take some time to settle the actual ratio between the two, and, as a great intellect is not needed to perceive that the operation of contracting for a house at or near gold prices, and paying for it, at the end of a year or two, in Mexican dollars, is, financially, a very advantageous one for the owner, thousands of people would embark in building speculations, which, owing to the long interval between the making of the agreement and the payment of the contract price, offer, under a system of gradual Mexicanization of prices, greater profit, with less risk, than any others. A moment's consideration will, however, show that the owner's profits are taken out of the pocket of the contractor, who has had to give gold value for what the owner pays for, at the completion of the building, at the Mexican standard. At present, the necessary protection of the builder's interest may, apparently, be secured by the simple substitution in the Uniform Contract of the words "standard gold coin," in place of "lawful money" or "current funds." Later, it might be more difficult to make the change, by reason of complications arising from legislation designed to carry out the

declaration of the Democratic platform in favor of prohibiting the making of contracts payable in any particular sort of money. A statute making it a penal offence to stipulate for payment in gold for one's goods or services would bear much more hardly on builders than on salmon-fishers; and if the former wish to establish a standard of value for their contracts, it is decidedly advisable to do so now.

A DISCUSSION is going on in the *Engineering Record* in regard to the first invention of the steel-cage construction now so much employed for high buildings in this country. It is hardly necessary to say that Mr. W. L. B. Jenney, of Chicago, has long been accorded, by general repute in the profession, the honor of having been the first to use this construction in an entire building, the Home Insurance Building, in Chicago, having been designed by him in 1883, with piers of cast-iron columns, encased in masonry, and carrying a flooring of steel beams, the first steel beams, by the way, ever used in a building in the United States. This use of cased metal piers was devised by Mr. Jenney to meet the problem which every office-building presents, of reducing the piers, and enlarging the openings, to the extreme limit consistent with safety, and he appears to have been indisputably the first to employ for this purpose the system which has since then been developed with such wonderful rapidity. The mere use of metal and masonry together in walls dates, however, much farther back than 1883. Mr. George B. Post, as he reminds the *Engineering Record*, built, in 1881, the court-yard wall of the Produce Exchange, in New York, with a cage of cast-iron columns and wrought-iron girders, filled-in with brick panels; and, if we are not mistaken, it was a year or two before this that a house was built in Paris, and illustrated in the French professional journals, the street wall of which consisted of an iron frame, put together in imitation of the old English and German half-timbered work, filled-in with panels of brickwork. In this case the iron skeleton was exposed to view; and, in general, the conception of the mixed constructions of metal and masonry, which were not uncommon fifteen or twenty years ago in railway buildings, theatres and other structures where lightness and wide spaces had to be reconciled with fireproof quality, seems to have regarded the masonry as a mere panel-filling, or, occasionally, a screen. Mr. Jenney's idea was altogether different. He, virtually, designed an iron building, not very different from scores of mercantile structures of that period in New York, and clothed it with an epidermis of masonry. This was an innovation, and, as it has been proved, a most valuable one; and while we are glad that Mr. Jenney did not patent his device, as, it seems, he thought of doing, he ought to have all the credit that he deserves for it.

AN instructive case, showing not only the way in which the powers of the architect are defined by the contract, but the strictness with which the parties to the contract are bound by the authority that they have agreed to delegate to him, is briefly mentioned in the English papers. A man named Kenworthy had a mercantile building erected under the direction of an architect. The contract with the builders stipulated that, in the case of extra work, the architect should measure and value the work, and should give his certificate for payment; and another clause specified that in cases of disputes arising between Kenworthy, or the architect, and the contractors, and not otherwise provided for, an arbitrator, to be mutually agreed upon, should decide. The contract price amounted to nearly seventy thousand dollars, and when the work was completed, the contractors claimed about eight thousand dollars for extra work, besides twelve hundred and fifty more as damages for delays on the part of the architect and the brickmaker. The architect threw out these claims, and gave his certificate only for a balance of about fifteen hundred dollars. The contractors thereupon demanded an arbitration, and, as Kenworthy refused to concur in appointing one, they applied to the courts to appoint one. The first court held that, under the contract, they were not entitled to one, and refused to make the appointment, and they appealed to the Court of Appeal, the justices of which sustained the ruling of the court below, saying that the question was whether the matter to which the dispute related was provided for by the stipulations of the contract. In their opinion, the contract meant that the architect should measure and value extra work, and give his certificate for payment, and the contractors were not entitled, under this clause, to substitute an arbitration for the architect's decision.

IT will be remembered that some time ago, after the death of Ferdinand de Lesseps, it was reported that the real author of the scheme for the Suez Canal was an Austrian engineer, whose plans de Lesseps, who had already become interested in the proposed undertaking, bought for a low price, after the death of their author, and used as his own. The Austrian *Monatschrift für den Öffentlichen Baudienst* gives some further particulars of the story, which are interesting. It seems that the Austrian engineer whose plans were bought by de Lesseps was a Tyrolean, named Negrelli, who was born in 1789, at Primiero, in Southern Tyrol, of a distinguished family. He was educated at home, and in Italy, and in 1819 was already attached to the official engineering staff for Tyrol and Vorarlberg, and was engaged in the topographical survey of the valley of the Inn, and the construction of the Schönbergerstrasse in that valley. Later, he was sent south of the Alps, to study the regulation of the overflows of the Adige, and, in 1822, was one of the chief engineers of the great Arlberg highway. His reputation increased rapidly, and, in 1832, he was called to Switzerland, where, first as engineer to the Canton of St. Gall, and afterwards to that of Zurich, he carried out very important works. In 1840, he was summoned back to Austria, to take charge of the construction of the new Ferdinand-Railway. A little later, he was given the general direction of all railway works in the northern part of the Empire, and, after successfully planning a system of roads, he was called to lay out the railways for the Kingdom of Wurtemberg. In 1848 he was sent to Italy, to restore the railways and other communications disturbed during the political troubles of the time. In this work he was so successful that he was ennobled, under the title of Ritter von Moldelbe.

IN 1846, the question of a canal across the Isthmus of Suez had come up as a matter of international politics, and an Association for the study of the engineering problem was formed, at the instance of the Ministers Metternich and Kübeck. Negrelli had, some eight years before, interested himself in the subject, and was made a member of the new Association, as was also the Englishman, Stephenson, and the French Talabot. The next year, he went to Egypt to study the route of the canal, and levelled it through, ascertaining that, with the exception of local variations in the Arabian Gulf, the waters of the Red Sea and the Mediterranean stood at the same height. His mission to Italy interrupted his Egyptian studies, and it was not until 1855 that he was able to make a second visit to Egypt, and study the details of his plan, which was for a sea-level canal, as distinguished from the schemes proposed by his colleagues, which contemplated locks, and, in a weekly journal, the *Austria*, during the year 1856, he presented his views, which accorded very closely with the plan afterwards carried out. In June of the same year, a Commission met in Paris, in which, after long discussion, Negrelli's plan was unanimously adopted. Two years later, he received from the Viceroy of Egypt, Said-Pasha, the appointment of Inspector-General of the Suez-Canal Works. He was, however, already in failing health, and in October of the same year he died. A few months later, his plans, maps and notes were sold by his heirs, and de Lesseps, who held an official position in Egypt, and had interested himself in the Canal project, bought them, and, undoubtedly, used them as his own. He seems to have done so quite innocently, and to have been willing to acknowledge his indebtedness to the great Austrian engineer, for, in a map of the Canal-City of Ismailia, which he dedicated to the Abbé Negrelli, the brother of the engineer, "in remembrance," as the inscription says, "of his excellent and regretted brother, my intimate friend," he shows an important street through the middle of the new town, marked "Rue Negrelli." Even if de Lesseps had been enough of an engineer to modify Negrelli's plans, he would hardly have had time to do so, for work on the Canal was begun in April of the same year in which he bought them, and there can be little question that they were carried out substantially as Negrelli left them. A few years ago, the present representatives of the Negrelli family sued the Canal Company for reimbursement for such rights as they had been deprived of by the transaction. They recovered nothing, and, indeed, it is hard to see on what ground a court could award them anything; but the documents offered in evidence seem to have established clearly that their progenitor, and not de Lesseps, was the real designer of the Suez Canal as it now exists.

CHURCH ORGANS AND ORGAN-CASES.¹THE WOODBURY BUILDING.
AT HYDEON, MASS.DANIEL HOWARD WOODBURY ARCHT.
DES. (REPRESENT. BY SKETCH)

THOSE charged with the construction and preservation of church organs are not unfrequently held responsible for certain defects connected with the use of these costly instruments—defects for which they should not be blamed and against which they often contend in vain. We are referring to defects which not only impair the usefulness and musical quality of the organ, but which are also apt to prove injurious to the reputation of the manufacturer and to his monetary interests and those of the church owners as well. In most cases the individual organ-builder finds it impossible to secure the adoption of his recommendations on the part of the architect, or the building-committee; or, prompted by considerations of business sagacity, he refrains from taking a decided stand against existing adverse conditions; or, perhaps, it may be already too late to enforce the proper conditions for the placing of the organ when the organ-builder is approached. In such instances the result is generally unsatisfactory, and blame is thrown on the builder for what could easily have been avoided, if the needs of the organ had been properly studied at the right time.

The Union of German Church Organ Builders, therefore, deems it necessary, in the interest of the art-branch which it represents, to call attention to a few important points by the publication, from time to time, of appropriate articles on the subject. In the following lines, it will be our aim to deal principally with the evils encountered in furnishing organs for new church edifices. The primary condition is that, in planning, sufficient floor-space should be assigned to the organ for the proper placing of the pipes. With this condition unfulfilled, the various sets of pipes are often so crowded together as to make access to them in many places difficult. This, again, renders any sort of adjustment or repairing work difficult and costly. Another great disadvantage is that, by crowding the pipes, the production and quality of tone are sure to suffer. In many cases, the size of the organ-loft is determined by the architect, while a musical expert is called to decide upon the number of stops, before the order for the work is given to the organ-builder. The latter, in his endeavor to live up to the specifications, finds himself facing the necessity of deviating from the most approved plan of arranging the pipes and is compelled to make the best of the available space. It is, therefore, to be recommended to architects having the interest of their clients at heart, to obtain the opinion of an expert organ-builder as to how many stops are required in view of the size of the church before the planning of the organ-loft, and what length, width and height are needed for their proper arrangement. From these data, to which must be added the needful space for the choir, the size and the elevation of the organ-loft may be determined. It will then be feasible for the organ-builder to arrange the pipes according to an approved system, which, in itself, is a great point gained toward the successful accomplishment of his task. It is also necessary for the architect to inform himself about the weight of the organ and case, to enable him to properly compute the strength of the floor. Perfect rigidity is a requirement of the first importance, the continued trembling of insufficient supports being simply ruinous to an organ.

The question of lighting, too, requires due consideration. Experience teaches that it is best for the organ to receive its light from the front only, viz., through the side windows of the church, so

that the inner portions of the instrument may remain pretty well in the dark. Direct sunlight falling on the outside, or the inside, of the organ always proves injurious to it. In recent years, in Germany, the west window (so-called even though its position may not be west at all) has become the fashion again, much to the annoyance of the officiating priest or clergyman, who has to stand at the altar, or in the pulpit, with the glare shining in his eyes. This window in the wall over the front entrance may have been a necessity centuries ago when churches had no organs, or small ones, at best. Then the architect was seeking for a feature to enliven and decorate that large wall-space. Nowadays, when the musical portion occupies an ever-increasing prominence in divine service, this west window is no longer a necessity, but, considered in its effect upon the organ, is a decided evil. The window occupies the space that ought to be given up to the organ. As the architect is not likely to consent to a partial covering of the window, the remaining space below and at the sides of it will in most cases prove insufficient for the advantageous placing of an organ proportioned to the size of the church. Looking upward from the aisle to take in the effect of the organ-prospect, the eye, blinded by the light falling through the great west window, will see nothing except the black upper outline of the organ-case, an effect which must be pronounced an artistic failure. To this must be added the injurious action certain to be caused by the sunlight falling into the organ from behind, even though its intensity be subdued by stained glass. Add, further, the periodical heating of the organ-pipes by the sun, the injurious effect of cold draughts and dampness affecting the delicate mechanism of the instrument, all occasioned by that window. Supposing a pane to be broken by some cause or another, nothing will prevent rain or snow from entering the organ-case. Frequently the broken pane may not be discovered for a long time, yet even when discovered, the mending of the window, on account of its inconvenient position, is often delayed. The window, moreover, during the summer and autumn attracts hosts of flies who make their way into the pipes, where they die, thus spoiling the intonation.

We believe the majority of architects have not the remotest idea of the disadvantages they create for the organ by introducing this favorite window, by which, after all, a satisfactory interior effect cannot be obtained for reasons explained before. To the contrary, this window brings into view the larger wooden pipes and the big swell-boxes which ought to be hidden from sight, but which the organ-builder finds impossible to place where they will not show, and thus the artistic effect of the organ-case is marred.

To dry a new church-building rapidly, coke fires are often employed in Germany. So long as the organ has not been placed in the church, no objection can be raised against this practice. With the organ, however, in position, the action of the gases issuing from the coke fires is pernicious. The tin pipes become tarnished and blackened, the brass bolts and pins, wires, springs, etc., become oxidized and so brittle as to break at a mere touch. An organ injured in this manner requires very extensive repairs to render it useful again.

In some cases, the expedient of washing the tile floor of a church with diluted muriatic acid has been the cause of blackening the highly-polished front pipes² of a new organ, giving them, in a few days, the ugly appearance of lead, which cannot be undone by a simple rubbing, but requires a thorough abrasion of the surface and renewed polishing to restore the pipes to their original bright appearance. The employment of injurious chemicals for cleaning purposes is, therefore, a thing to be avoided.

Not less important than the proper erection of the organ is the preservation of the same. We will, therefore, state the most important causes which, being more or less permanent, may work injury to the organ. Where churches are heated by gas-stoves without the needed provision for carrying off the fumes of combustion, or where the church is lighted by gas-jets, a certain injurious effect upon the organ-pipes similar to that caused by the coke fires, though less pronounced, will be noticed. Heating the building, as a general thing, unless continued throughout the week, has the effect of putting the organ out of tune. The front and smaller interior pipes become heated first and thereby higher in pitch, while the larger wooden pipes become warm more slowly and do not rise in pitch until after a lapse of eight to sixteen hours. The warming up of the inner pipes may, however, be hurried up by furnishing the case with open-work panels, which may be inserted during the winter months in place of the solid panels which are preferable in summer on account of better keeping out the dust. To obviate the difficulty of inequality of pitch, it is recommended to start the heating of the building from eight to twelve hours before the beginning of the service.

One of the worst enemies of organs to guard against is dampness. This is especially noticeable in the spring. In much frequented churches, the exhalations issuing from the crowded assemblage, unless carried off by proper means of ventilation, are deposited along the ceiling and on the walls and pillars of the edifice. Often streams of water may be seen trickling down the walls, or the water may drip from the ceiling. In winter, still larger quantities of water are deposited on walls and ceiling by freezing on, only to thaw, at the rise of temperature, and make every object inside the church, the

¹ Translated by F. G. Lippert from a paper prepared by order of the Union of German Church Organ Builders, and published in the *Deutsche Bauzeitung* of Berlin.

² It may be here stated, by way of explanation, that in Germany preference is given to a plain, but highly polished, metallic surface over the multicolor decorative treatment generally employed on the front pipes of church organs in this country.

organ included, dripping with moisture. Wherever in a closed space the atmosphere is full of moisture in conjunction with foul air, the building materials will rot in a comparatively short time: wood-work falls an easy prey to worms, leather is covered by mouldy growth, the glue holding the parts together decays. The mechanism of the organ, owing to the swelling of leather and woodwork and the oxidizing of the metallic parts, becomes impaired and refuses to work smoothly. The wind slots of the wooden pipes become contracted, re-acting unfavorably upon intonation and harmonic quality. The most carefully-made piano, put in such a place, would in a few weeks become totally unfit for use. There are cases on record of new churches in which, after one year's usage, dry-rot was found to have attacked the pews and other woodwork, so requiring their partial renewal. It is true that, in constructing organs, the manufacturer, being familiar with the harmful effect of dampness, does observe every possible precaution to impart to the organ a considerable degree of resistance in this direction. An organ may, by conscientious painstaking, be brought to perform its functions well, in spite of prevailing dampness. But, unfortunately, the latter condition is by no means permanent, alternating in the summer months with a drying-out process almost as harmful. In some localities where rain is scarce for months at a time, organs known to be a hundred years old and over, have been observed to become so dried up during some of the recent dry summers that they utterly refused to work. The main source of harm, then, lies in the alternation of dampness and dryness.

To combat these evils effectively, there is but one way open, viz: to provide an effective, constantly-working system of ventilation. This may be arranged in various ways. We recommend the following on account of its simplicity: All around the outer walls of the building, about ten feet apart, through the walls are cut circular openings of six inches diameter, covered on the outside by a wire netting to keep cats, rats and mice from getting in, and closed on the inside by turned wooden stoppers fastened to chains. These stoppers serve to close the openings during divine service, thus preventing draughts. In their stead, slides, or registers, the same as for hot-air flues in heating houses, may be used. Through these openings fresh outside air is constantly introduced into the church. The ceiling should be provided with a few large circular openings covered with open-work metallic rosettes (of hammered zinc plate) of twenty-four to thirty-two inches diameter, through which the ropes holding up the chandeliers may be conveniently passed. Avoid placing any openings right above the organ, or anywhere near it. Also avoid having any doors behind, or near it, through which a draught of air might be generated. The organ must stand out of all draughts. Above each rosette a wooden lid, raised like a table on four legs about one foot high above the opening, is then placed in the loft, as a safeguard for workmen against stepping through the opening. In the roof, ample provision must be made for carrying off the air rising through the rosettes, either by open dormer windows, or inserted hollow roof-tiles, or, by conducting the foul air into the church steeple from which it may escape into the outer air. It is obvious that the combined area of the outgoing air-ducts must equal that of the openings in the ceiling as well as the wall-openings at the base of the church.

If you provide a new church with this simple ventilating apparatus, you may safely erect your organ even before the church walls have become perfectly dry. In a church not so provided, it is safer to wait a full year before erecting the organ, as the latter is exposed to greater injury during the first year in a new church not perfectly dried out than in the following ten years combined. It is greatly to be recommended, and will richly pay for the expense, to introduce this method of ventilation into old church buildings also.

The organ should also be protected from the attacks of birds, mice and others of the smaller animals which may work injury either by leaving their dirt behind, or by eating away the leather and wood-work. Bats seem to have a preference for the bright metallic pipes, leaving behind corrosive spots which, once dried up, can only be removed by abrading the surface. Bats and birds are also apt to get into the pipes and sound-cups of the reeds, where they are caught and perish. Not only do the pipes thus choked up become useless, but upon the decaying bodies worms will feed and, in multiplying, find their way into the bellows and valves, causing trouble wherever they reach.

Finally, dust, small particles of plaster and grains of sand dropping from the ceiling, as well as undue vibrations of the gallery-floor, act injuriously upon the musical quality of the organ. To guard against the flying dust raised in sweeping the church, the use of damp sawdust thrown upon the floor of the church and galleries before the sweeping may be recommended.

That a leaky church roof will in time work injury to the organ is too obvious to need more than mentioning.

A church organ is a very complicated instrument, composed of thousands of small parts and a number of different materials, which in the nature of things must gradually wear out and therefore require, at regular intervals, careful and intelligent inspection. There are organs which have not felt the touch of an expert hand for many years, but this is poor economy. One pipe after another refuses to respond, intonation and harmonic effect become gradually more and more deficient. One stop has to come to the support of another, until finally the organist has to give up playing in despair.

To play upon such a worn-out instrument during divine service constitutes, in our opinion, an offence against the good musical taste of the congregation obliged to listen to the performance, Sunday after Sunday. The regular listeners gradually get so accustomed to the defects of the worn-out organ that their musical perception becomes dulled and corrupted, while to an outsider the defects in the instrument are at once noticeable.

We, therefore, emphatically recommend to the church authorities, governing-boards and trustees to intrust, against a fixed remuneration, their organs to the charge of an expert organ-builder who shall carefully examine them once, or twice, a year, or at least, once in two years, adjust the mechanism and tune the pipes. In doing this he will have frequent opportunities to discover, and bring to the attention of the authorities, any drawbacks and defects, and to nip in the bud any dangers that may threaten the costly instrument, thereby often saving the expense of extensive repairs.



A NEW MUSEUM BUILDING FOR CHICAGO UNIVERSITY.—THE QUADRANGLE CLUB AND ITS CLUB-HOUSE.—COLONIAL WORK.—NEW CHURCHES.—THE ART INSTITUTE EXHIBITION.—THE GROWTH OF THE INSTITUTE.

DURING this last month still another new building has been completed and dedicated in the group of buildings for the Chicago University, which will eventually form the quadrangle or enclosed space of the college grounds proper. This last structure is the Haskill Museum for Oriental study and curiosities. Like all the other buildings, which have all been designed by Mr. Henry Ives Cobb, this Haskill Museum is designed in a modernized English Gothic and built of buff Bedford stone with red tile roof. The outline is less strictly characteristic of the prevailing style than are those of some of the other buildings of the same group, and the solid unbroken outline of the structure seems also to offer less picturesque points than do the more irregular, more characteristically English ones. The structure is fireproof and is, so far as a casual observer can judge, a solid, satisfactory construction as viewed from the practical side. That all four doors of the entrances open into the hall rather than out, contrary to the laws of the State of Illinois, seems a little curious. It seems a pity that in interior finish the design of the exterior could not be a little more thoroughly carried out. A certain attempt at Gothic feeling appears to have been essayed in the stairs and banisters, but an inglorious defeat is heralded by the newel-post, a small monument to inartistic originality. This same adventurous spirit breathes forth in the capitals of four pilasters of this entrance-hall, where the heads of American eagles are made doubtful features to combine with the star, presumably of crescent intimacy. Lecture-rooms occupy the chief space of the building, while two large rooms in the upper story are designed for museums of Eastern curios, connected with the religious and domestic life of the people of the Orient.

Already, the foundations for two other new structures are being put in place, and before very long the number of buildings will be such as to suggest the whole group as it is planned. Certainly in America no collection of college buildings will in any way compare with this, worked out as a whole and each one placed according to a well studied plan, as to the effect they will have on each other, and on the whole scheme. The grounds as yet are in a somewhat chaotic condition and are poorly kept up, but the near prospect of frequent building doubtless reduces the interest in the grounds at present to a minimum, but presumably the landscape-gardening question has already been taken into consideration, in the general scheme of placing the buildings, and will eventually be well carried-out. It might seem questionable how wise it is to put off the matter of tree-planting, which must be an important feature in transforming this desolate prairie into a spot where the paths of learning will fall in pleasant places. It is a delight that such a pleasant scheme has been conceived, and that the fine buildings are not to be placed haphazard, one lessening the effect of the other and a combination of several styles lessening the general harmony of the whole.

Chicago, heretofore, has been the scene of so many very large undertakings, million-dollar sky-scrapers, World's Fair buildings, great hotels, etc., that at present, in a dull season, we feel as if but little work were going on, hardly realizing, till we actually begin to look at the matter systematically, that in the houses and semi-public buildings recently put up, or still in the process of erection, some of the best and most artistic work of the whole city is to be found. For the present in these letters we shall review this work, which during the last year has been going on, on the three different sides of the city. As is very natural, a steady growth has set in around the vicinity of the University. Churches from farther up town have bought property in this neighborhood and are preparing to erect new edifices down here, for not only has the college settlement

brought many new people into this quarter, but the desire to combine the attractions of city and country is sending many people from the more crowded up-town districts into those places of greater freedom and greater sunshine.

Just to the east of what will eventually be the college grounds proper is situated the Quadrangle Club-house, a club composed chiefly of the professors connected with the Institute. The Club has just settled in its new quarters. As if to offset the prevalent English style within the grounds, this structure, as well as several others, shows a revival of the old Colonial, which at least speaks well for patriotism and in some instances for a love of the beautiful, for the so-called Colonial can be either a thing of extreme beauty or something devoid of all semblance of it. Many of our forefathers builded just as well as they were able, or as well as they knew how. Their material was often the coarsest, the architectural detail heavy and clumsy, such as the village carpenter could best design and execute, but they built just what their needs required, a broad, roomy house, often surmounted with a little cupola or lookout from which they could watch the approach of foe or friend by land or sea. It was all genuine, unaffected, and finally by that "ceaseless turning of that mill of time, that never for an hour stands still," a new dignity has been added, till finally we hold the least attractive of those structures, something that is truly admirable. The house of the Quadrangle Club hardly belongs to this type of Colonial architecture. Placed, as it is, on a western prairie, no protecting trees sheltering it, it presents to the gaze all the undesirable and but few of the desirable points of the old Colonial mansion. It is built of a coarse, red brick, laid in white mortar. The white ornamental details are heavy and ungraceful, and the entrance, only a few feet from the street, is devoid of almost every architectural feature. The structure is surmounted by a small white pepper-box outlook, neither the beauty nor use of which is apparent to the average mortal, though perhaps the Club members, as being men of unusual wit and intellect, might be able to tell why it was put there. If it were not for the association we Americans have with this certain type of Colonial, few among us could find aught to admire in it. To a foreigner, in whose judgment there entered no tender memories "of the days o' auld Lang Syne," there would seem to be possible but one verdict.

Several of the houses in the near neighborhood have less of the homely element about them, while several blocks farther north a most beautiful new Colonial residence brings up before us all the charm which some of these old houses did possess, when possibly a Bulfinch designed them, and an owner's purse was long enough to permit of sending across the sea for such fine material as the new country did not possess. This house on the corner of Wood Lawn Avenue and Fifth Street is simply charming. Built of fine buff brick and harmonizing red-slate roof, the best features of the old Colonial are preserved, while modern taste has added much—the more ample porches, and a certain luxury of appointment which was foreign to the old Puritan sense of propriety, albeit they may have liked such things. In this house the most beautiful type of the Colonial is taken for an inspiration and improved upon, in accordance with existing conditions, since why should the limitations of our forefathers be copied, when such limitations no longer actually exist? The impression given is one of unaffected beauty and elegance: nothing strained; no feature magnified out of its right proportions to produce an effect.

In the vicinity of the University is a very successful Italian house now nearing completion. The roof is carried on brackets like many of the old Florentine structures, the details are well carried out, and the general character is pleasing and well-suited to the place. The material is a mellow buff brick, suggesting the sunlight which its prototype would bask in. The house is especially noticeable from its almost total absence of carving, its entire charm consisting of beauty of proportions and harmony of color.

One of the Unitarian churches from farther north begins this summer in this immediate neighborhood a chapel, to which the entire church is eventually to be added. It is a memorial chapel, which is to be presented to the church, the Church of the Messiah.

A Congregational parish has its new structure, from designs of Pond & Pond, well under way, about a block away from the Unitarian site. This structure is noticeable in its strong individuality and distinct removal from the commonplace, though possibly its entire good taste might be questioned. The materials are a variegated brownstone combined with a brown brick. The brickwork becomes very striking by having every fourth course accented by a dark, dull, purplish brick. The brickwork around the window-openings carries out this same scheme of color and a dull-green slate roof completes the combination, which is certainly not as inharmonious as the description would indicate. There is a certain ruggedness about the composition which, though departing from school traditions, still preserves one marked feature of Italian mediæval work: its strength is in a manner picturesque and, as stated above, far from being commonplace and characterless. It is the farthest removed, praise be to God, from that so-called "Gothic" sanctuary, so prevalent in our city here, where the devout Christian tries to worship weekly, regardless of architecture and art. The main features of the design are the rose-windows, the arched balustrade around the roof, the Renaissance buttresses carrying consoles, combined with the unusually large and effective wall-surfaces.

Not far away, one church blossoms out with an oriel window hang-

ing from a church spire, while the heavy belfry of another is carried on pillars, under which is the chief entrance.

To many, churchly traditions in architecture mean nothing, and the monstrosity that is part club-house, part town-hall, and a wee bit church is to them the nineteenth-century sanctuary in its most successful development. That every artistic and beautiful effect is lost in it, is a very secondary matter. It seems to be a widely accepted opinion that, if in the building of a church every accepted law of good taste is set at naught, every established canon of art is violated, then, on the mere face of it, that church must have broken away from the soul-fettering thoughts of past ages, and stand for advanced ideas and progress. A church can be well designed, its style can be pure and dignified and it can yet meet the requirements of the modern church life of to-day. Nothing can show more plainly than the history of ecclesiastical architecture itself how beautiful may be a style, the result of special needs for special times and occasions. What a contrast between the old basilicas in which the early Christians worshipped and that wonderful creation of the Middle Ages, the Gothic cathedral. And yet, nearly every step was natural and the outcome of either the needs in building or the requirements of the worshippers.

As is said above, in this southern part of Chicago it is interesting to see the growth which is coming, not only with the settlement of the University in this quarter, but with the desire to leave the dirt and noise of the city behind. For many years these once southern suburbs have had a good and steady growth, but with the increasing conveniences in transportation land in this quarter is becoming much more available. Sections which once were considered very far south are now so built up as to present the appearance of regular city streets. The houses in this quarter are detached and their façades seem to offer more than the usual opportunity for architectural flights of the wildest kind. In one narrow city lot we note a gable containing an oval window; underneath, two oriel windows separated by a stained-glass parallelogram; while beneath, two semi-demi Romanesque arches occupy the entire breadth of the house. Nondescript carvings occupy most available spaces, excepting the front steps, which are occupied during this season by a family of all ages and generations, giving a still greater effect of unrest to the exterior.

A very beautiful mansion in this part of the city is a recent creation of the firm of Shepley, Rutan & Coolidge. It is Italian Renaissance in style, of dressed stone and most beautifully carried-out in all its details and carving. It would offer most charming subjects in its different parts for the photographers' art, and could well be considered worthy to be the subject of a monograph. One very beautiful feature is the cornice. This is ornamented with very charmingly carved garlands, alternating with shields bearing the lilies of Florence. Another attractive feature is the loggia on the east façade, with most delicate carving and well-designed wrought-iron balustrade. Not only is the house itself carried-out in the perfect harmony of the chosen style, but the grounds also are laid out in the same excellent taste, even to the iron fence and orange-trees in tubs.

In contrast with this very satisfactory, well-studied creation is a house a few blocks off, belonging to one of our prominent packers, Mr. Armour. There is nothing very faulty about the design, but it just falls short of having the artistic touch of the last-mentioned house. Built in the early French Renaissance style, of brownstone, it does not seem to have the dignity and refinement that might have been obtained with less pretentious material, though the present effect may be due to carving, which certainly was not executed by an educated sculptor, as should have been the case, but rather by an expert stone-cutter. In parts the design is not as strong as might be, but the general composition is well handled. Certainly the details in the carvings, such as the under-cut work around windows, are charming in execution and design, but such work, notwithstanding it is good, is overshadowed by some bad figure-work in an east and north dormer, and some of the same description around the main entrance. In the dormer a poorly executed "Mercury" with a "lady friend" stands prominently forth, and over the doors two very unconventionalized and poorly-drawn little boys sprawl around. All of these faults should be laid at the door of the sculptor rather than on the shoulders of the architect, who evidently was not allowed a workman worthy of the work.

During the last month the Art Institute has held its usual annual exhibition of school work. The general grade of the work is high, showing that the standard of the school has been very materially raised since its early days. Some very strong work is shown in the life classes, both from the nude and costumed models, and in fact excellent work is to be seen in all the grades of the regular academic department of the institution. As strong a showing as that made anywhere is in the large room devoted to the classes in design and architecture. This is especially true in the architectural department, where a much higher grade of work than ever exhibited in previous years is to be seen. The methods of expression in architectural design have improved beyond compare with examples shown in former years. Less weakness is noticeable in the mechanical and artistic execution of the designs and, also, the designs themselves show a more decided character of excellence. Especially in the classic composition does the school training show, and, as is natural in such cases, the students show themselves more at home than in any other style.

The work in the classes of design is most excellent. In the

designs for ceilings, architectural ornamentation, mosaics, tiles, wrought-iron, etc., the work of the architectural school is most happily supplemented. Very attractive studies, showing a feeling for things artistic, though not giving evidence of such hard work as in some of the other departments, are the designs for book-covers and posters. The design of architectural ornament executed in plastic evince more originality than in previous years, though the Sullivan-esque spirit, spoken of as shown in former exhibitions, is still somewhat apparent.

The advances which the architectural school is making will, before many years, place it on the same grade with the best technical schools of the country. A certain advantage will also be gained by its connection with the academic department, an advantage which it gains over many of the other schools not so situated. That there is advantage for the scholars in drawing from the casts, that they gain much in having lessons in water-color and pen-and-ink from men like Fleury, that freedom in design must come from practice in such drawing and work in a constant art atmosphere, no one can fail to admit, when the work of men having such advantages is contrasted with those who have not had them. Certainly, a museum as fine as that already possessed by the Institute cannot fail to be a great factor towards a better understanding and appreciation of art in all its branches. Mallock says in his "New Republic," that a cultured man is one "on whom none of the fine flavor of life is lost." If this is true of culture in general, it is, above all, true of artistic culture, and nothing makes for that culture so surely as a familiar intimacy with the best of art in all ages, and the art school which cannot give its students that intimacy fails in a large and important part of its teaching.

As the students are growing older and their number of years of working together increases, a certain amount of *esprit de corps* begins to be visible — always a good thing for a school.

Most people away from Chicago will be surprised to know that the Art Institute numbers seventeen hundred students in its school-membership roll, and those most interested in the institution itself feel that, from the fact that unlike many similar institutions the school itself is self-supporting, it has reached the place where it is bound to prosper in spite of hard times and financial depression. This extremely good financial condition shows what may be accomplished in a school which has been wisely managed, and whose growth has been natural and steady, expenditure and enlargement coming only with the actual needs.

As there are no preparatory schools to draw from, the Institute must take such material as is at hand, and when the question of raising the grade occurs, it can only be considered by increasing the amount of study required during the course, or the number of years for its completion.

One advantage which the school has had over many another is, that the positions of manager and director have from the very first been held by the same two men, men who were most thoroughly suited to fill those positions. No years have been wasted in "fresh starts," but the growth of the Institute has been a steady and natural one.

VIBRATIONS OF BUILDINGS.

MR. J. R. MILNE, F. R. S., says, in *Engineering*, that the vibrations experienced in the buildings of many large cities are usually those created by passing trains or the proximity of machinery running at a high speed. They are usually truly elastic in their character, and so minute that it is often difficult by mechanical means to obtain a record from which they are distinctly measurable. By such means, however, the writer has obtained distinct diagrams showing rapidly recurring movements of less than one five-hundredth part of an inch. With photographic registration, movements of very much less amplitude may be noted. If we are content with merely seismoscopic evidence of the existence of vibrations in a structure, it is not difficult to put up apparatus that shows us the vibrations caused by a cab a quarter, or more than a quarter, of a mile distant. As the cab approaches, the movements of the apparatus increase until it passes, when they are at a maximum, after which they die away. The actual motion in the building which causes such tremors can be measured as fractions of some unit, like an inch.

The disturbance seen in a dish of mercury, caused perhaps by a train passing at a distance of one or two miles, only tells us that vibrations are present, but such observations do not enable us to speak definitely as to their magnitude.

One curious feature presented by vibrations in buildings is that of their distribution. In a tall building, rooms at about two-thirds of its height may possibly experience more movement than those at lower levels, although we may have every reason to suppose that the motion has entered the structure at its basement, and then passed from the lower stories to those at a higher level. Another peculiarity is the great difference observable in the quantity of motion felt in rooms upon the same story, which is probably dependent upon differences in the arrangement of beams and materials used in construction.

Although the study of these movements is of the greatest scientific interest, the practical aspect of the question generally resolves itself into the ways and means by which they may be minimized or destroyed. To minimize vibrations which exist in a building is a prob-

lem which can sometimes be solved by the builder, but the means by which this is accomplished vary with the conditions by which he is surrounded. The destruction of vibrations usually devolves upon the mechanical engineer, who may at once be faced by the impossible problem of obtaining complete balance for an ordinary type of engine. Assuming that his engine cannot be changed, the next solution of the problem is to so balance his engine that it produces a minimum disturbance, to do which he must first determine which components of motion are producing the greatest effects. Should this fail, he is left to join hands with the builder, and seek means whereby the evil creations may be eaten up by damping or discharged to air.

After a factory has been established, the destruction of the vibrations it creates is often a matter of difficulty and cost, both of which might often be avoided had proper consideration been given to the character of the machines employed, their foundation and their sites, before the installation had been commenced.

From the preceding imperfect notes, it will be gathered that the study of the vibratory motions of earthquakes, and the jolts and vibrations experienced on railroads, have led to results which, whether regarded from a humanitarian or a financial point-of-view, are of considerable importance. As to the results which may accrue by extending our knowledge of the vibrations of bridges, steamships, buildings and various structures, inasmuch as we are only yet entering a new field of inquiry, it is impossible to foretell; but from the little we have already gleaned, it is not unlikely that the study will be accompanied with fruitful returns.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE ALCAZAR, ST. AUGUSTINE, FLA. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatin Print, issued with the International and Imperial Editions only.]

GRACE CHURCH MISSION CHAPEL, NEW YORK, N. Y. MESSRS. BARNEY & CHAPMAN, ARCHITECTS, NEW YORK, N. Y.

IN a quarter of the city which is absolutely bare of architectural adornment, where the struggle of life is so severe that there can be no thought of forms or of the meaning of beautiful things, the architects have set a cluster of buildings which can not fail to have the refining effect of simple beauty, and which will tend to bring pleasanter forms into the character of future buildings.

The scheme of the architecture is of the later French Gothic, and the simplicity of the walls surmounted by an elaborately decorated tower gives one the impression of a strength and grace which, in this type of buildings, are inseparable.

Fronting Fourteenth Street one sees a massive gateway, screened with wrought-iron gates, the decoration of which preserves the general forms of the Gothic decorations of the church. Beside this, toward the East River, appears another gate, wide enough to serve its purpose of a hospital entrance, and beyond this is seen the trinity of low buildings, which have been erected for a triple hospital — one division for old women, another for old men and the third for children. These buildings have been named in the same order — the House of Ann, the House of Simon and the House of the Holy Child. The color effect of the group is subdued and exceedingly grateful in the surrounding waste of dirty red brick. The architects have used brick with a narrow face, and of the color of well-dressed brownstone. Within this background the windows of the church and the morning chapel stand as the only bits of distinct color.

This is not alone to be a church and a hospital, but a complete ecclesiastical establishment. The interior of the main church carries out the general scheme of the exterior in its warm decoration, the desirable simplicity being at all times rigidly observed. The edifice will seat 800 persons. The high roof is trussed, but this is done so skilfully as to give it the appearance of having massive woodwork resting upon light-colored pillars. At the right of the church is a frieze of the apostles in life-sized figures, and at the left of the chancel there is a remarkably beautiful window presented to the church as a memorial of Helen Hoffman Coppel. Above the altar are three lancet windows representing sacred subjects. The altar-piece is an old Spanish painting, of great beauty, of Christ bearing the cross, a memorial of Albert Gallup.

Along the eastern side of the church extends an arched passageway, which in other lands and under other conditions would be known as the cloisters, but here it serves to connect the Fourteenth Street front of the group of buildings with the buildings in Thirteenth Street. They open on a wide court which will be used as the open-air playground for the children who will come under the influence of the establishment. The hospital is fitted with the most modern appliances for the relief of the injured or destitute sick. The wards are large and roomy and the dispensary has all the conveniences and the seclusion so desirable in an institution of that kind.

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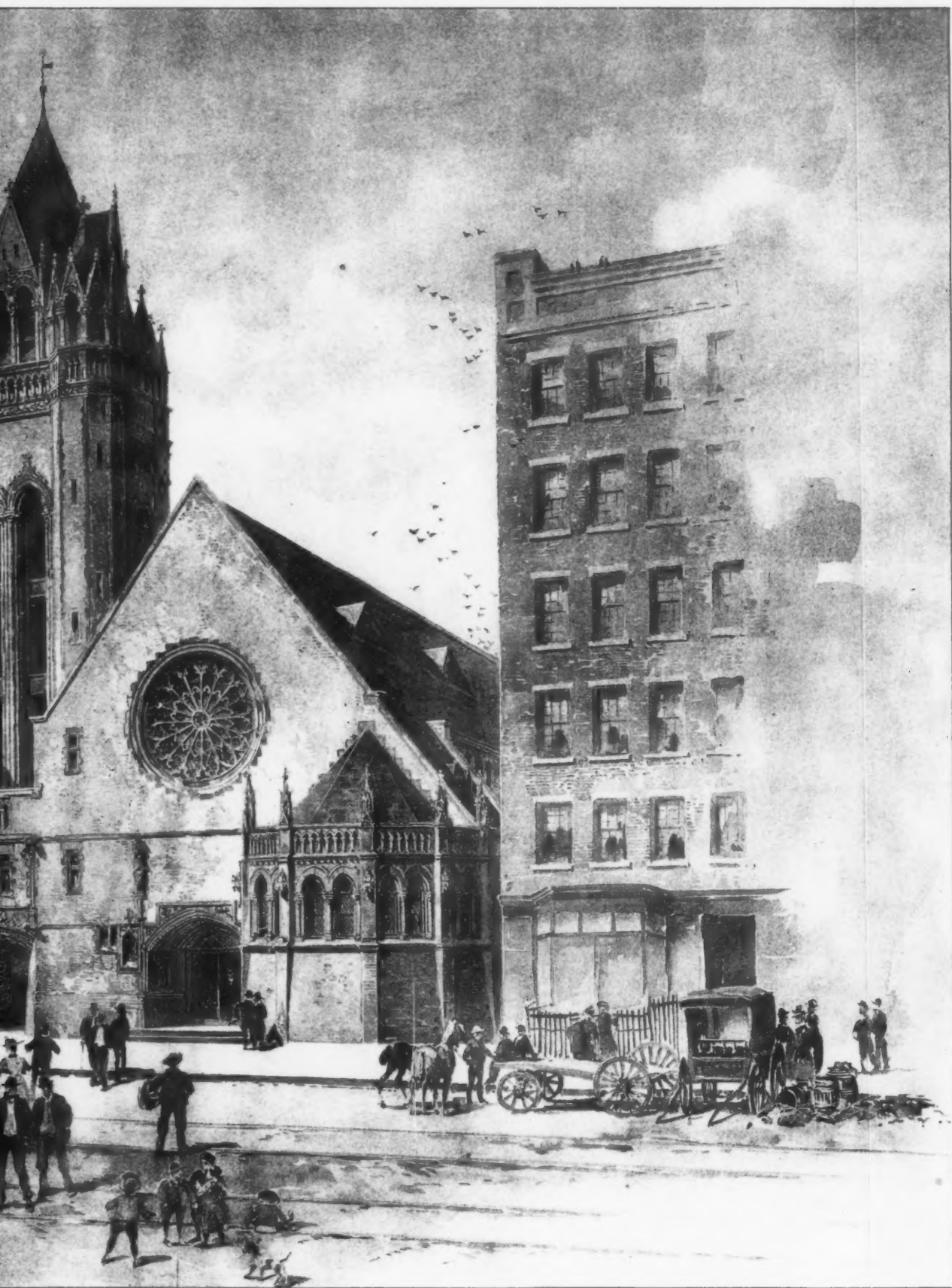


GRACE CHURCH MISSION BUILDING, THIRTEENTH STREET, NEW YORK, N. Y.
BARNEY & CHAPMAN, Architects



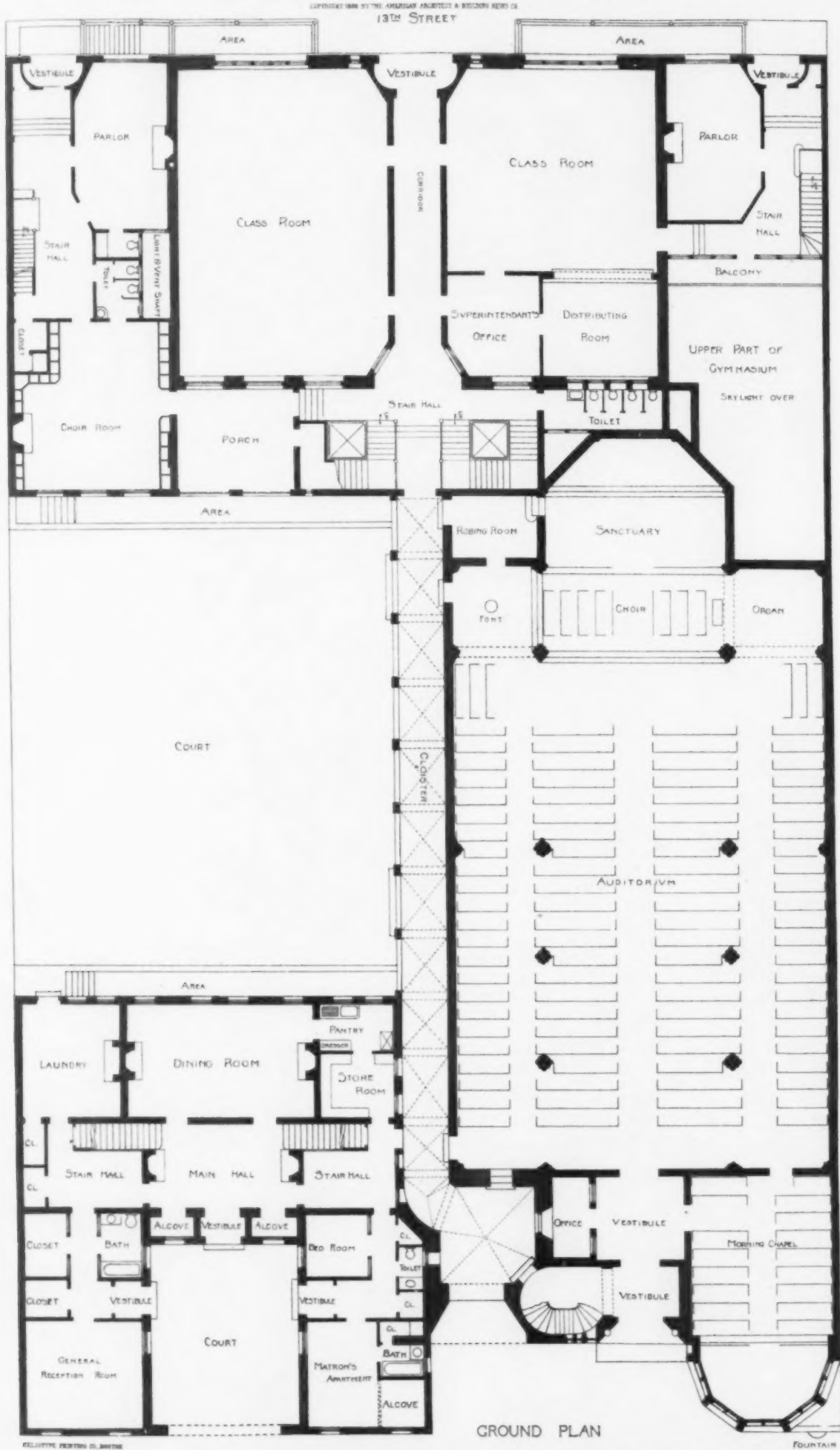
THE NEW GRACE CHAPEL AND
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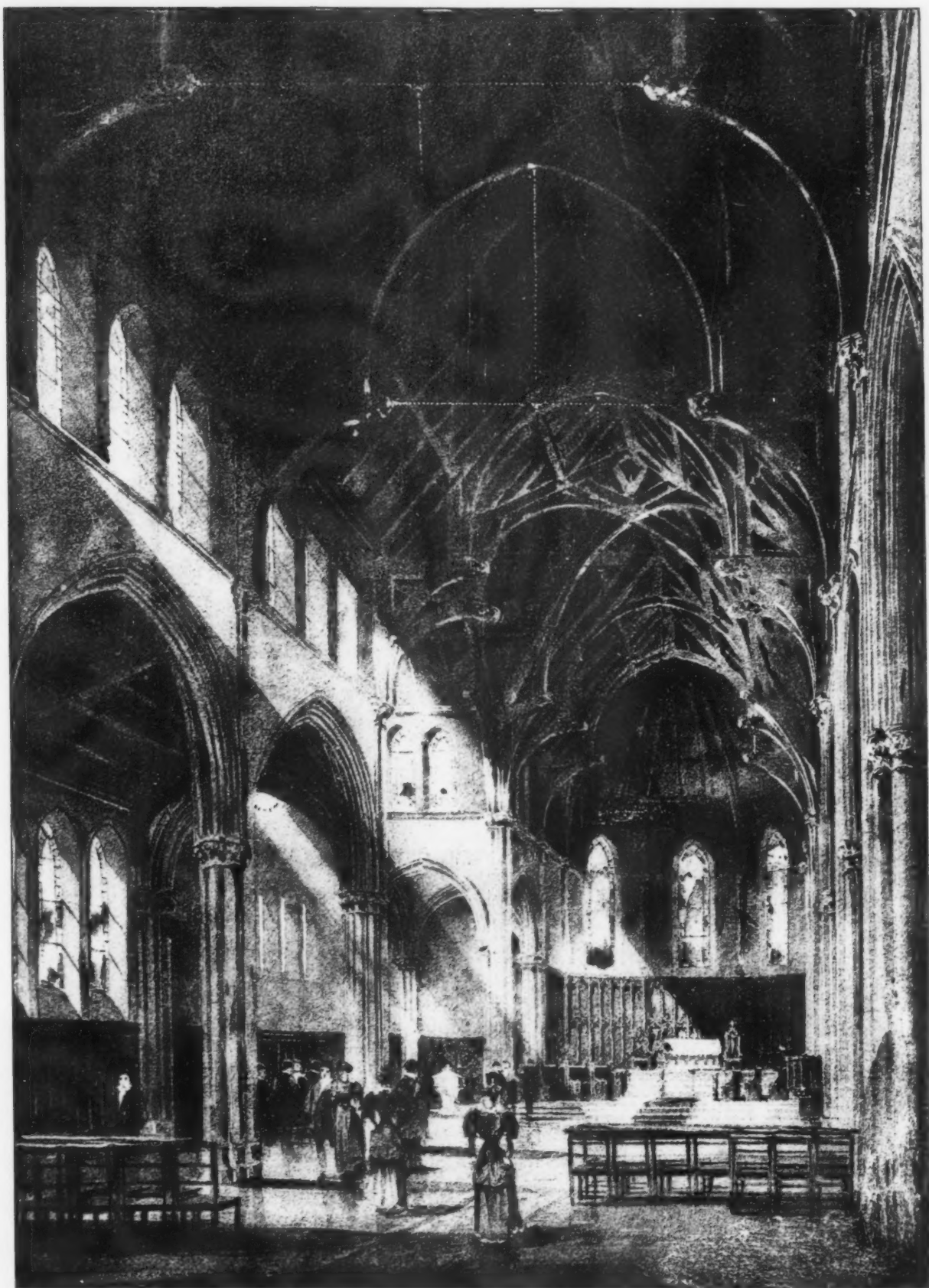
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THE NEW GRACE CHAPEL AND MISSION BUILDINGS, FOURTEENTH STREET, NEW YORK, N. Y.

BARNEY & CHAPMAN, Architects.

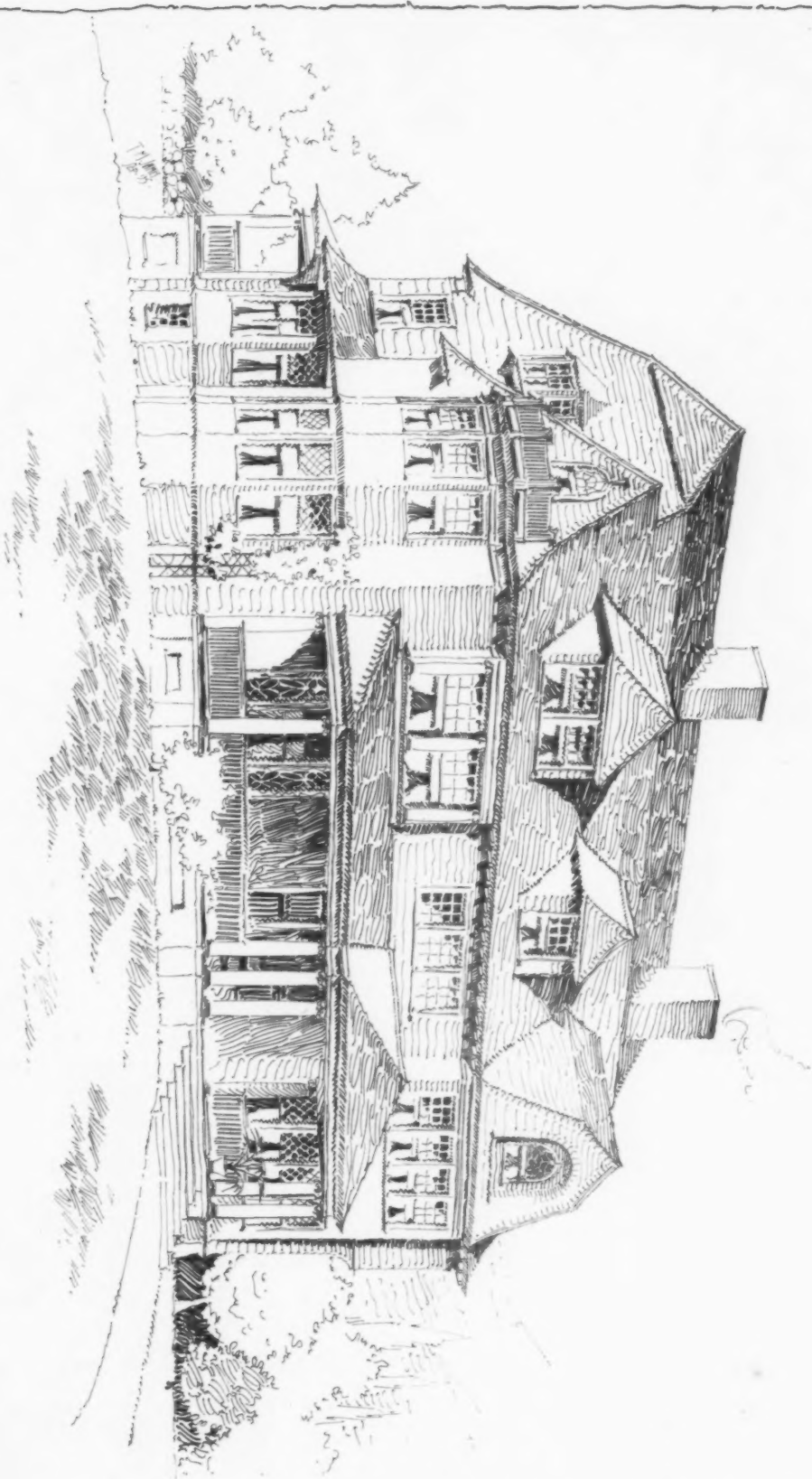


MELLITT'S PATENT CO. BOSTON

THE NEW GRACE CHAPEL AND
MISSION BUILDINGS

BARNEY AND CHAPMAN ARCHITECTS
1286 BROADWAY, NEW YORK

HOUSE OF MR. CHARLES D. CAMPBELL, WEST NEWTON, MASS.
EUGENE L. CLARK, Architect, Boston, Mass.



HOUSE OF MR. CHARLES D. CAMPBELL, WEST NEWTON, MASS.

EUGENE L. CLARK, Architect, Boston, Mass.

The buildings in Thirteenth Street consist of a clergy-house, a club-house and a parish building, and in these the skill of the designer is shown in an admirable manner, setting this village of clerical and educational work down in so restricted an area. The club-house is an immensely interesting building, showing, as it does, what modern church work means in a crowded city like New York and in a densely populated neighborhood such as this one. In this building are about all the conveniences which could be asked for in the most carefully arranged fashionable club. Of course, its extent is limited, but all that is necessary to amusement or exercise and cleanliness is there. The parlors are tastefully furnished and decorated, the reading-rooms are spacious and well-lighted, and made especially inviting by the comfortable character of the furniture and decoration, and the gymnasium will compare favorably with those in the much more pretentious athletic clubs. In the gymnasium is a space allotted for hand-ball and the paraphernalia of the athletic work is of the best sort.

Opening off of this is a series of dressing-rooms and a huge swimming-tank, lined with porcelain brick and heated with steam coils. Hence it is believed the neighborhood will be convinced that the propaganda which Grace Church is engaged in does not mean to exclude the enjoyment of healthful exercise and the luxury of a plunge.

The parish-house includes the school-rooms for all ages of students, not forgetting a night-class of adult students, and each of these rooms is made attractive by means of their admirable ventilation and carefully simple decoration. On the top floor of this building is a very large room, which is to be used for the Sunday-school for all classes. It is a particularly pleasant apartment even now, without its occupants, for it impresses one at once with a sense of cheeriness, because of its broad windows and its lofty ceiling. The room is not quite rectangular, and its slightly broken area adds to the effect of spaciousness.

Besides these apartments there is a cooking-school, which has not alone the practical purpose of teaching the girls of the neighborhood how to prepare palatable food, but the still greater charity of giving the hungry of the district an opportunity of securing some of the food prepared which otherwise would go to waste.

On the lower floor of the Clergy House are the offices of the mission. The second floor is devoted to a suite of apartments for the vicar. Above this are the rooms for the deacons who will assist the clergyman in the work of the mission. There are six of these rooms, all opening, in case it is desired, on a set of rooms which may be used in common, either for work or amusement. The apartments are handsomely furnished and are very inviting. Above these, again, are the rooms of the sexton.

Standing on a platform which is on a level with the third floor of the parish-house and looking out on the cluster of buildings, the central tower shows its height and its massiveness, and its clustered decoration about the belfry makes it the crown of the whole beautiful group of buildings. The belfry contains a carillon which was given to the church in memory of Martha Green Potter, a niece of the Bishop of the diocese.

One of the most attractive parts of the church is the morning chapel on the Fourteenth Street side of the group. It will seat only one hundred persons.

MISSION BUILDING FOR GRACE CHURCH PARISH, NEW YORK, N. Y. MESSRS. BARNEY & CHAPMAN, ARCHITECTS, NEW YORK, N. Y.

INTERIOR OF GRACE CHURCH MISSION CHAPEL, NEW YORK, N. Y. MESSRS. BARNEY & CHAPMAN, ARCHITECTS, NEW YORK, N. Y.

HOUSE FOR CHARLES D. CAMPBELL, ESQ., WEST NEWTON, MASS. MR. E. L. CLARK, ARCHITECT.

[The following named illustrations may be found by reference to our advertising pages.]

BOOK-COVER, IN GOLD, SILVER AND ENAMEL, OF ALBUM OF THE MOSCOW EXHIBITION, PRESENTED TO THE CZAR, ALEXANDER III. DESIGNED AND EXECUTED BY MM. CHRISTOFLE.

DECORATION OF THE VAULT OF THE HALL OF PENITENCE, PALAZZO FARNESE, CAPRAROLA, ITALY.

PORTION OF SGRAFFITO DECORATION, VIA DI S. MATTEO IN MERULANA, ROME, ITALY.

A GROUP OF CANOPIES.

[Additional Illustrations in the International Edition.]

ENTRANCE PORTICO: HOTEL PONCE DE LEON, ST. AUGUSTINE, FLA. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

DETAIL OF THE ALCAZAR, ST. AUGUSTINE, FLA. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

SOUTHBOROUGH PARK ESTATE, TWICKENHAM, ENG. MR. ROLAND PLUMBE, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

"THE ADVERTISING FAKE SCANDAL" AGAIN.

IT is not infrequently that we receive from indignant architects copies of trade-circulars which offer to architects, in the shape of a commission on sales effected through their agency, what is in reality nothing more nor less than a bribe, which no honorable architect can accept. Such circulars are sent to us by architects, with the request that we "show up" the authors of these debasing proffers, whose mere existence and issue are so grave an injury to the profession.

We have always entertained doubts as to what was the real intent and meaning in the minds of their authors of these offensive circulars, and believing that in very many cases nothing wrongful was intended, and that in proffering a bribe the tradesman apprehended he was only extending a lawful "trade-discount," we have made a practice of writing at some length to the authors of such circulars, explaining what is the real fiduciary relation between architect and client, and how impossible it is for an honest architect to accept such discounts, and formally counselling them to discontinue a practice which, at best, could only bring them into contact with the dishonest few rather than the honest many. We are pleased to say that in every case where we have made this explanation we have received a grateful acknowledgment of the trouble we have taken, coupled with the statement that the commission had been offered in entire ignorance of the real relation of architect to client; that it had been withdrawn from circulation and that no others of similar character would be sent out.

We make this statement because it has a bearing on the opening paragraph of the subjoined letter from a large manufacturing concern whom we had been requested by architects to "show up," because of their seemingly nefarious methods of business.

As to the subject-matter of the communication we have already expressed our opinion, and have declared our feeling that this matter of fake advertising constituted a scandal to the profession. Of course, in a profession whose bonds of membership are as loose as are those of architecture in this country, there must be men of varying grades of moral perceptiveness, and we had imagined that it was only in the ranks of the "ar-chi-itects" that could be found those who would condescend to meddle with advertising fakes. It will be noted, however, that our correspondents allege that a certain "well-known firm of architects" has attempted to blackmail them into advertising. Happily, a firm can become "well known" for more causes than one, and we hope that if the firm in question is not already known as seeking an income through dishonorable methods, it will speedily become so.

Fortunately, the cure of the evil is largely in the hands of the advertisers themselves — not a very large class, and once these advertisers are awakened to the fact that these architectural souvenirs are nothing more nor less than blackmailing fakes, this scandal to the profession will be very short-lived.

July 15, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Under date April 15th, you took occasion to write us concerning a letter which we had been sending to architects; the architects took exception to our letter, and in deference to them, we withdrew it, as we did not wish to do anything that would be objectionable to them as members of a profession. Your letter left us with the impression that it was your aim to rectify wrongs, no matter where they exist, so we to-day call your attention to methods adopted by too many architects, and that is, in publishing books of designs, and compelling material-men and manufacturers to pay the expense of such publications. The reason we use the term "compel" is, that the material-men and manufacturers feel compelled to yield to the architect's solicitation for an advertisement—they feel that if they do not do so, the architect will have occasion to drop them from his list for all future work. From a letter now before us, received from a well-known firm of architects, we quote as follows: "We have decided, in addition to the illustrations and descriptive matter, to insert special advertisements from builders, artists and material-men, whom we recommend to our clients"; and again, "The descriptive matter shows who the builders were, and the kind of material used"; and

again, "The book will be distributed among a list of people that we have carefully prepared, and in other ways, which, in our judgment, will be to the best interests of all concerned"; and again, "It will be valuable in its influence," from all of which we understand that if we, ourselves, do not join with the architect in this advertising scheme, and contribute what he conceives to be our share towards the expense of the publication of his book, we will not only be dropped from his list, but, it may be, that his influence would be used with his clients in a way that prospective orders for our apparatus would be lost. You can see that this places us in a very embarrassing position; there is not enough profit in our business to enable us to place advertisements with all the architects who send us such letters, and yet we feel that if we refuse, or offer an excuse, or even if we do not make any reply, that we will suffer accordingly. Now, we feel that this is an injustice, which should be corrected, and that if architects choose to publish their designs, the advertisements of material and apparatus men, and others, should not be permitted therein, but that the architect should stand the expense of his publication, just as material-men do the expense of their catalogues and other publications. We cannot afford to come out openly and make the statement which we now make to you confidentially. Our only object in writing you is to see whether the Association of Architects will not put its stamp of disapproval upon these methods. The letter we refer to gives us no opportunity to dodge in any way. We quote from the letter the last clause, as follows: "We ask, as a special favor, that you give us an expression of your wishes in the matter, at once." It seems even dictatorial in its tone. Do you not think so?

Trusting the matter may have consideration, we remain,

Very truly yours,

— MFG. CO.

ARCHITECTS OF THE BULFINCH FRONT.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Not very long ago Messrs. A & B, two Boston architects, thinking that the work upon the Bulfinch front might, as a matter of business, be considered separately from other work upon the State-house, made an effort to obtain that commission for themselves.

The matter was brought to the attention of the Executive Committee of the Boston Society of Architects who promptly and imperatively condemned the proceeding, saying that Mr. Brigham was the architect of the State-house and that to supersede him in any portion of his work was both unkind and unprofessional.

Upon this presentation of the case Mr. A, who was a member of the Boston Society of Architects, immediately withdrew, and after a time his partner gave up the chase.

Within a few days a trio, consisting of the President of the Boston Society, another member of its Executive Committee, and the gentleman selected to represent that Society in the councils of the American Institute, have accepted the commission which the other architects were condemned for coveting, and have presumably entered upon their work.

The *American Architect* is, I believe, the organ of the American Institute of Architects. What does it think of the above proceeding?

X.

[Our correspondent evidently writes under the impression that he has lighted upon a case of tweedledum and tweedledee. Even if the two incidents he cites had transpired contemporaneously, instead of at intervals of two years, during which surrounding conditions had changed very materially, there would be marked differences between the two cases. It seems enough to point out here that, in the first case the men were seeking the office, and in the second the office was, emphatically, seeking the men. In the first case the assumption was, in the slang of the day, that "a public office was a private snap"; in the second case, the assumption is that it is the duty of a good citizen to yield gracefully to a public demand. We must on our own behalf point out that the *American Architect* is not the "organ of the American Institute of Architects," or of any other body. Like the *New York Sun* it, so far as it is able, "shines for all."—Eds. AMERICAN ARCHITECT.]

A CORRECTION: ST. MARIA DI CARIGNANO, GENOA.

BOSTON, MASS., July 22, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In looking over some of your latest issues, I find in that for June 27, a half-tone of the Church of St. Maria di Carignano, which you place in Geneva, Switzerland.

May I call your attention to the fact that the church shown in your illustration is in Genoa, Italy?

Very sincerely yours,

LOIS LILLEY HOWE.

[The blunder our correspondent corrects was due to misreading Genoa as Genève.—Eds. AMERICAN ARCHITECT.]

THE UNIVERSITY OF CALIFORNIA COMPETITION.

SAN FRANCISCO, CAL., July 6, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I am in receipt of the copies of your issue of June 13th, for which find enclosed postal order, with my regrets that your paper does not take a more hopeful view as to the result of the

contemplated competition for the plan of buildings of the State University.

Many of the greatest architects of this country have written me, stating that this competition is the greatest opportunity they have known of in the history of architecture, and we, in California, believe this to be so, and, so believing, we are a little surprised that this matter is treated with less consideration by the leading architectural journal of this country than by similar European journals.

It is but just to state that your views express the fears of others in this behalf, but whatever their grounds of fear and foreboding as to our success by the methods we may adopt, we beg to assure you, and through you, all others, that the Board of Regents of this University will succeed in this enterprise, for they will devote time, care, thought and attention enough, and far more than enough to doubly insure that success.

Every human end can be had, if the requisite means be employed, and we will furnish such means, and have plenty to spare.

We will show adequate and superabundant cause for the effect we seek.

We reiterate, that we contemplate placing on the noblest site of the earth the most glorious architectural pile in history—and we will do it.

"The East" takes too little "stock" in "the West." It deems our claims as to the site and the buildings contemplated, a thoughtless boast.

Those who have seen the site know that it is and must be an inspiration, and those who understand our people appreciate that we will make that inspiration a reality, and it is high time that the Eastern people, with the glory of the World's Fair at Chicago dazzling and dazing them, should take us seriously and should begin to believe that there is on this western shore a deep and abiding sentiment for the true and the beautiful; that fair women and brave men are here; that we love the State of our birth, royally blest by nature as she is; and that we have a just pride in her glory and that of the Union of which she is so glorious a part, and that such a people in such a State, for such a purpose, knowing what they want, will not fail to get it.

Yours very truly,

J. B. REINSTEIN.

[We publish the foregoing letter from a Regent of the University of California that intending competitors may, by aid of its statements and its rhetoric, gain a further insight into the conditions that surround this competition. We gave the matter careful, not careless, as our correspondent infers, consideration and have no desire to modify what we have already said. We regret sincerely that in satisfying their needs the Regents have elected to follow a method that entails a cruel waste. We cannot forbear remarking how bodingly mournful it is that in writing such a letter upon such a subject, a man of our correspondent's position should feel it necessary to drag in the "East" and the "West."—Eds. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

ELECTRICITY AND WATER-POWER.—There is no form of energy that is so far-reaching in its benefits to the welfare and comfort of the world as electricity. There is no force of means so plentiful in a static condition as electricity. There is no kind of power that can be so absolutely controlled by a consumer as electrical power. There is no source of energy so easy of access or so richly provided as water-power. There is no form of motion that is more perpetual than a waterfall. There is no machine that depreciates so little for the amount of work it performs as the dynamo. There is no medium of transmission so little wasted by transmitting power as a wire. There is no form of investment more certain of continual returns, than an intelligent development of electrical water-power plant. There is no reason for delaying the use of our waterfalls except that our investors do not as yet fully appreciate their importance. There are waterfalls enough to turn all the machinery required for the comforts of mankind for centuries to come, and, unlike other sources of energy, they are exhaustless. By the union of electricity and water-power our great and now smoky manufacturing cities can be made models of comfort and cleanliness. By the combination of these two forces, the locomotive with its soot and cinder can be hushed and side-tracked. By the adoption of these sources of energy and heat our great blast furnaces and smelting works may become odorless and clean.—Mark A. Replogle in the *Electrical Review*.

THE EYESIGHT OF SCHOOL-CHILDREN.—The important matter of the sight of school-children has been receiving attention in Baltimore. The eyes of 53,067 pupils were examined, and the percentage of normal vision was found to be: first grade, 35; second, 41; third, 47; fourth, 49; fifth, 48; sixth, 48; seventh, 54 and eighth, 56 per cent. In the cases of 9,051 pupils the eyesight was found to be so defective as to make any schoolwork unsafe. An unexpected and unexplained result of the examination was the showing of a steady decrease in defective eyesight from the second to the eighth grade, the second showing 30 per cent less than the first, the third 42 per cent less than the second, the fourth 53 per cent less than the third, the fifth 63 per cent less than the fourth, the sixth 75 per cent less than the fifth, the seventh 85 per cent less than the sixth and the eighth 91 per cent less than the seventh. The eyesight of some pupils in the higher grades had been improved by their wearing glasses, and some teachers found that "stupid" children were making better students after an examination of their eyesight.—N. Y. *Evening Post*.

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT.

No. 170.

SATURDAY, AUGUST 1, 1896.

VOLUME LIII.
No. 1075.

WHAT THE ARCHITECT SHOULD KNOW ABOUT HOUSE-FINISHING.

THE Murphy Varnish Company of Newark, N. J., have brought together in a neat little pamphlet a few of the many instructive bits of advice and recommendation that they have been publishing in this journal for several years. The shrewd intelligence that the writer of these weekly exhortations manifests proves he is possessed of intellectual resources of no mean order.

We give below a few extracts from the pamphlet in question:

Whoever wants a *perfect finishing material* should know where to get it; and know that it is not to be had in the bargain-counter way.

The architect must not only know what patterns of mantel and window, and what colors of wood will properly decorate a given room; he must know what make and grade of varnish will bring out and preserve the full beauty of those various woods. For a given wood, in a given place, he must know how many coats of varnish to put on, what time to allow for drying, how the rubbing should be done, whether shellac ought to be used; just as he must know how to lay a foundation or spring an arch.

I. What a specification is not.

1. A simple requirement that "first-class varnish" shall be used is *not* a specification. Suppose the architect merely demanded "first-class stone" for the walls of a building—limestone? brownstone? granite? what? Any first-class stone, however, would make a solid wall; but any one of a dozen (hundred?) first-class varnishes might utterly fail in the work of architectural finish.

2. A mere demand for the varnish of some particular firm—"Murphy's varnish," for instance—is *not* a specification. Murphy makes varnishes that cost less, and varnishes that cost more, than his architectural varnish; but they are not the proper varnishes for house-finishing. To merely add the maker's name is no more definite than to require that the unspecified stone shall be gotten from a particular State.

3. To write a specification and destroy it is *not* a specification. Here are samples: "Murphy's Transparent Wood Finish or something equally good"; "T. W. F. or its equivalent." Suppose your doctor wrote a prescription and added "or something equally good"—leaving the druggist to decide whether he will give you the medicine suggested or some other. If the druggist really prescribes, why should you pay the doctor?

II. What a specification is.

1. A specification *must* give the maker's name. No two manufacturers make the same article. For instance: "Murphy Varnish Company's."

2. A specification *must* give the brand name, just as you would designate the grade of shoes or cloth. For instance: "Transparent Wood Finish."

3. A specification *must* define the special finishing material for a given work. For instance: "T. W. F. Interior" for inside work, and "T. W. F. Exterior" for outside work.

4. A specification *should* make precise demands as to the method of doing the work. For instance:

a. Fill the grain thoroughly with a coat of Mineral Paste Filler, properly thinned. Rub off well, and allow twenty-four hours to dry. Omit this from close-grained woods.

b. Apply a thin coat of shellac on all interior work (except bath-rooms and places exposed to water), and, when dry, rub lightly with No. 0 sand-paper.

Never use shellac on bath-rooms, laundries, or outside work.

c. Apply two or three coats of varnish on inside work: (never less than three coats on bath-rooms, laundries and all places that get no shellac.) Three coats on all outside work. Allow each forty-eight hours to dry. Flat each coat with No. 0 sand-paper, curled hair, or moss, before applying the next coat.

If a bright finish is desired, leave the final coat glossy. If a dull finish is desired, rub carefully with fine pumice and water in three or four days.

It is Murphy's duty to make sure that his operatives produce the kind of varnish he orders, not merely to theorize on varnish. It is the architect's duty to superintend the building—to make sure that all specified materials, stone and brick, and iron and glass, and wood and varnish, are used—that the owner gets what he pays for. . . .

Every architect knows that any failure to make the specification clear and positive, concerning the use of the right varnish, means the use of cheap stuff, the spoiling of ornamental woods, the disappointment of the owner—then, . . .

1. It is a common saying in politics that measures may be judged by the character of the men who advocate them. Every dishonest painter objects to specification. All he asks is that he may be "held to results." Then he can charge two-thirds the price of T. W. F., use a varnish that costs one-third; tickle the owner's "nearness," and put on a shine that will last till the bill is paid.

2. Every reputable painter wants an exact

specification, for that will shut out the "tramps" and enable him to do a good job at a living profit.

3. All painters understand that a make-believe specification—"something as good," "its equivalent," "first-class material,"—is a formal and dignified announcement of their privilege to use what they like, just so it shines till the owner accepts the house.

The worst of all is to lump the finishing with the carpentering, and allow the carpenter to sub-let to the lowest bidder.

That takes away the last semblance of responsibility. Of course the carpenter will write no specification for varnish. Of course the lowest bidder will be the man who calculates on using the cheapest stuff in the market. Of course, each of these gentlemen charges a profit up to the owner, who must also pay the architect for superintending the work he neglects.

Make a perfectly clear and positive specification, both for the varnish and the varnishing. If any man wants a cheap job, specify cheap varnish. That will be entirely honorable. If results are bad, the painter may clear his good name by producing the contract.

Treat the finishing trade with the respect it deserves, by letting contracts directly to reputable painters, and refusing the bids of those who need extra watching. If there be an unusually large proportion of frauds in the finishing trade, it is because they have been called into it by the—well, by the *careless* methods of architects. The way to get rid of them is to deal squarely with the trade. A wit has wisely said that "lips and cheek surrender to backbone."

When Ruskin demanded certain things of the English architects, a few of them cried out "impossible." "O-ho," said he, it is not the impossibility of it that I am talking about, but the *indispensability* of it." The right method is indispensable to good results in finishing. It is indispensable to honest dealing with owners. It is indispensable to the reputation of painters. It is indispensable to the progress of architecture and the good name of architects. It is indispensable to the manufacture of fine varnish itself. What is indispensable, all round, is not impossible. It is thoroughly and easily practicable—with a little stiffening of the backbone.

AN IMPROVED BELL-TRAP.

W. GORDON MILLER Co., Pittsburgh, Pa., desire to state that the demand for their "Improved Bell-Traps" is assuming unusually large proportions, and that they have been compelled to leave off some important

departments of their business to cope with the increasing demand, working night and day to fill orders.

They claim that the advantages and improvements in the construction of this trap, place it so far ahead, that it is absolutely without a rival in the market to-day.

They mention that chief among the many advantages of Miller's Improved Bell-Trap is the fact that every trap has its cover secured by non-corrosive screws to body of Trap, thus overcoming the heretofore inevitable difficulties of the loose cover, which being so easily lifted off is often carried away or laid aside or broken, so that the premises is left without any trap protection a good part of the time, and the stopping-up of the sewer is not infrequently traceable to this condition of things, but the cover of their "Improved Trap" will not only remain firmly in place when stepping on it, etc., but unless there is absolutely occasion to remove it, it will always be found in its place and the trap kept in action.

Another immense advantage of "Miller's Improved Bell-Trap" is the *wash* of the Trap. It is especially constructed with this object in view, and its water reaches the bottom of trap with such force and vigor that the fixture is as nearly as can be made a self-cleaner, so that little or no sediment can remain in the bottom, but is forced by the action of the water out through the trap into the drain or sewer, hence requiring little or no attention to keep in running order.

Still another very important feature of the Improved Bell-Trap is in the cover, which has four different centre supports, by hook arrangements which grip the outlet pipe, so that the part of the old-style trap which is always considered the weakest is in the Improved Trap made the strongest part, thus adding immensely to the life and service of the fixture.

They also assert that notwithstanding the value of the above improvements and the machine work necessary in the manufacture of their traps, that they are actually placing them in the hands of the plumbing fraternity at the same price as the old-style Bell-Trap which never had any improvement since antediluvian times. Made in all sizes from 6" to 16". Circulars and price-lists will be sent to all parties requesting same and mentioning this paper.

W. GORDON MILLER CO.,
PITTSBURGH, PA.

VANDERGRIFT, PA., A NEW INDUSTRIAL TOWN.

JANUARY, '86, says the Apollo Iron and Steel Company, we took over the galvanized-iron business and works at Apollo, as they then were.

The works were of little value, but quite as good as the business. We reconstructed both as soon as we could, but gradually, and have carried them on for ten years as well as we could within limitations imposed by the fact that we had to extend our works a little this year and a little next year without any plan, and our place was too small to build on properly, if, indeed, we had been ready to build systematically. We had to build and keep on building, but couldn't build with a plan. We did put in the best machinery, such as we could; but we hadn't room for modern facilities.

Nevertheless, we made there, for several years, the best and largest output of galvanized-iron produced in the world; and, with it,

got and kept the lead in the American market.

We refer to the past for the sake of affording some indication of the immediate future; and this is for its bearing on Vandergrift.

Ten years ago we had strong competition. There were at least two makers of galvanized-iron ahead of us in every way. Two-day we have no competition on equal terms, or on nearly equal terms.

If, beginning small and behind at Apollo ten years ago, we got to the front in a few years with strong competition, and Apollo grew with us, all the more shall we now beginning again with the lead at the start, with our product preferred by both consumers and workers in galvanized-iron, with readier sale at higher prices on shorter credits, with costs in our favor, with larger resources from current trade, with facilities more than equal to any possible sale, and the means of extending indefinitely—all the more shall we grow, and Vandergrift with us.

But Vandergrift is a creation at first, not a growth. It must furnish homes almost immediately for a thousand men and their families. Growth will begin at about 5,000 inhabitants.

Our new Works at Vandergrift will be ready to start in September; such Works do not elsewhere exist. They are planned and built all at once, with unlimited space and time, with the latest approved devices and systems of work; in short, we begin anew with the help of our own experience, as well as of much observation of similar Works in other parts of the world.

Almost all works are built gradually, pieced out and patched. Our Works at Apollo were built in that way. We have built these new ones at Vandergrift, partly for present advantage in plan and system of work, and partly for future development. We have provided room for larger Works than we need at present, and these can be added without impairing the plan.

We have never been disposed to engage in any business outside of our regular work, but we had to begin this town; or else we should have the usual mill-town around our Works, for the employes must live near by.

What sort of a town should it be? In average towns and cities, the people are sick a certain per cent of the time, and die at a certain average age. By taking a little pains, we could have a town in which our employes and their families would be a great deal more comfortable, be sick not half so many days in the year, live twice as long (if you count children), and be stronger. Which sort of a town should it be? We chose the clean one.

The essential difference between the sanitary and unsanitary town is in drainage and sewerage; one is well drained and sewered; the other is not. But there are great conveniences that commonly go with drains and sewers, that cost not near so much if built when the town is laid out, such as pavements, sidewalks, waterworks, gas-works, electric-works, etc.

All these things are provided in cities; but how? One after another, separately, interfering with one another, at heavy cost; the work is never done, and the cost is never done with, in cities. Besides, the work is so done, in cities, that "modern improvements" do a great deal of harm as well as good, and entail no end of expense for repairs. The expense is not thought of, because it is paid by the city; but where does the city's money come from? These things are all done at once and beforehand at Vandergrift; well

done, too. They will serve their full use; and the cost of maintaining the various systems will be as light as possible.

But neither map nor picture can show how good a site we have. When you look at the place as it is, you see the slope to the north and east to the river, the Works on the flat below, the river, and the tumble of wooded precipitous hills on the other side. It seems formed by nature for just this use. The Works are under the foot of the slope, and, but for the chimneys, scarcely in sight from the town. The Works are along the railroad, sufficiently high to be safe from floods; and the town on the slope above, and plateau still farther above and back. We have the advantage of natural drainage, though we by no means rely on that; and the view from all parts of the town takes in the hills and ravines across the river.

The town-plan is by Mr. Frederick Law Olmsted, the architect of the general plan of the World's Fair at Chicago.

Our water comes from artesian wells in the hills: a source that assures an abundance of good clean water.

The preliminary work is well advanced. The grading was mostly done in the winter. The streets and sidewalks and parks will be mostly done this summer. The underground work is going on. By fall, a good many people will be in their houses and have full use of the streets, sidewalks, sewers, drains, water, natural gas, electric-light, etc. The streets will be paved with vitrified brick, the sidewalks curbed and paved; the sewers are under the streets; but the other pipes are under the alleys, not in the streets, to avoid disturbing pavements.

All this public work we have done ourselves. It is better done, and cheaper, than such work is ever done, or can be done, by the people. We have done it just as we build our own Works and manage our business.

Besides these public works, there are private beginnings. A planing-mill will be ready by the middle of summer. Six three-story brick buildings October 1st: the ground floors to rent for stores, the upper floors for dwellings. Churches are forming themselves—we give the ground for a church and pay half the cost of the church. A Building Society, started some months ago, is going on well; institutions of several sorts are taking shape. By the end of the summer, the town will have better provision for most of the wants of its people than any existing town of ten-thousand inhabitants. This is written in June when events are ripening fast; there will be more done in the next six months than we know beforehand. Almost the only advantage of older towns is the size of their trees; of course, ours are mere stubs—we have a fine woods near by, however.

We have started the town to enable our employes to live in comfort and health, and to save their money. It is a place where a man can set up and maintain as good a home as he is fit for.

In the beginning, the town will consist of our employes and the tradesmen to serve them in various ways; but we are already receiving a stream of inquiries from strangers who happen to hear of the new provisions for living at Vandergrift. Evidently there is general interest in it.

Other Works will come, if we choose to sell them the land—we have two or three times as much as we want for ourselves, adapted to Works and to nothing else, as good as that we have built our own Works

Cathedral of St. John the Divine.

New York, N. Y.



WE offer the illustrations of the competitive designs for the great Protestant Episcopal Cathedral, now building on Bloomingdale Heights, New York, submitted by the following Architects:

CARRÈRE & HASTINGS	NEW YORK, N. Y.	CRAM & WENTWORTH	BOSTON, MASS.
EDWARD P. CASEY	" " "	JOHN LYMAN FAXON	" "
HENRY M. CONGDON	" " "	PEABODY & STEARNS	" "
ROBERT W. GIBSON	" " "	*	*
B. G. GOODHUE	" " "	STEPHEN C. EARLE	WORCESTER, MASS.
HEINS & LAFARGE	" " "	*	*
HUSS & BUCK	" " "	T. P. CHANDLER, JR.	PHILADELPHIA, PA.
W. A. POTTER & R. H. ROBERTSON	" " "	COPE & STEWARDSON	" "
RENWICK, ASPINWALL & RUSSELL	" " "	*	*
FREDERICK C. WITHERS	" " "	W. S. FRAZER	PITTSBURGH, PA.
*	*	*	*
PARFITT BROTHERS	BROOKLYN, N. Y.	L. S. BUFFINGTON	MINNEAPOLIS, MINN.
*	*	*	*
W. HALSEY WOOD	NEWARK, N. J.	VAN BRUNT & HOWE	KANSAS CITY, MO.
*	*	*	*

In all, fifty-seven plates [loose], 14 x 20 inches, printed on plate-paper.

PRICE, \$2.50 PER SET.

AMERICAN ARCHITECT AND BUILDING NEWS COMPANY,

211 TREMONT STREET,
BOSTON, MASS., U.S.A.

on — flat and along the railroad. The town ready-made will attract them. We should not have gone out of our way to do such a job as this, and tie up money in lots and streets, and pavements and pipes, if we could have found a suitable town. And here it is ready-made, and as good for somebody else as it is for us; it is better for others; they haven't got to start it — no one likes to begin a settlement.

Apart from works and mills altogether, the town will attract inhabitants. Nowhere else are such comfort and safety and ease at any such cost. We mistake the shrewdness and thrift of people in general, if there is not a continuous active demand for property here at once.

APOLLO IRON & STEEL CO.
PITTSBURGH, PA.

THE MITCHELL WATER-HEATER.

WITHIN the past few years the system of heating residences and greenhouses by the circulation of hot water has become so popular that manufacturers have given much attention to the invention and bringing out of new designs in water-heaters. The result is that many water-heaters of faulty construction have been placed in the market and backed up by firms with large capital, who, by extensive advertising, have made many sales. That such faulty construction has been adopted by so many manufacturers of water-heaters, is not due to a lack of knowledge as to what was required in a heater, but largely for commercial reasons. Makers of hot-air furnaces felt the need of a water-heater to retain their trade with the heating public, and have adopted a construction of water-heaters which could be made with such foundry facilities as they already possessed, trusting to their selling facilities to place their goods upon the market.

In designing the Mitchell Water-heater we did not consult the resources of our foundry, or the class or kind of work in water-heating turned out by foundries in general, but de-

signed a heater based upon the truest and best principles, trusting to our ability to bring the foundry up to a point where we could successfully produce the work as designed.

After perfecting our model and securing our patents, we consulted some of the most prominent foundry and heater men in the country, and while all admired and spoke in the highest terms of our Heater as being the most perfect of any in the market, they yet doubted the feasibility of making so difficult a casting as the "due section" of the Mitchell Heater, except at such a cost as would virtually debar its use.

We refused, however, to give up a good and effective construction because it required unusual work and skill to produce the castings required. We made our patterns and put them in the foundry, and after considerable effort and work, and a loss of some castings, we gradually educated ourselves and our workmen up to the requirements of the work, so that to-day we put the Heater in the hands of the consumer, perfect in design and construction, and at a cost as low as any reputable Heater in the market.

MITCHELL HEATER CO.,
POUGHKEEPSIE, N. Y.

AS TO REPUTATION.

You may handle a good heater. But is the heater one that is known to be good? Reputation means a great deal in heating boilers.

The matter of heating is so little understood by the general public that the reputation of a heater goes a good way with the average consumer. It is easy to sell a boiler of known merit. And the dealer's profit on such a boiler is usually greater than it could be on one that is not so well known. Frequently our customers are awarded contracts in spite of the fact that their competitors have put in lower bids. The consumer is certain that our heaters are all right, and he willingly pays for that certainty. Oliver Schlemmer,

of Cincinnati, who is one of the largest heating contractors in the country, and who handles our heaters, writes as follows:

"The superior qualities of your Heaters are so fully recognized and my patrons have praised them so highly that in many instances I have been awarded contracts regardless of figures, where my competitors were quoting considerably lower prices."

If you consider the matter seriously, the above ought to appeal very forcibly to your good sense and judgment.

Let us remind you that, besides our line of Steam and Hot-Water Heaters, which is the largest in the world, you can get from us anything in the line of radiators, valves, pipe, fittings, tools, etc., so that you need open but one account. Our facilities are such that we can fill all orders with promptitude. Write us for terms.

We have in press the second edition of our "Fitters' Hand-Book," which will be much larger and more valuable than the last edition. The book has been carefully compiled by our chief engineer and is in every way complete. We shall be glad to send you a copy if you will write for it.

AMERICAN BOILER COMPANY,
NEW YORK, N. Y.

INFRINGEMENT WARNING.

NEW YORK, N. Y., July 25, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—It having come to our notice that various parties are offering to build what purports to be Babcock & Wilcox boilers, we wish to notify all whom it may concern that no outside concern has been authorized to build our boilers.

Without infringing a large number of patents owned by us, no one can build other than a very antiquated form of Babcock & Wilcox boilers, and buyers are warned to be on their guard in dealing with any one who offers them. Very truly yours,

THE BABCOCK & WILCOX CO.

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is the strongest and most serviceable Cement made, and will permit the admixture of a larger amount of sand or gravel with less loss of strength than any other brand; it is therefore the most economical. It is the finest ground cement made, and has the largest bulk to the barrel.

The following test, made in actual work, by Col. D. C. Houston, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most durable wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

Alsen's Portland Cement Works, New York Office, 143 Liberty Street.

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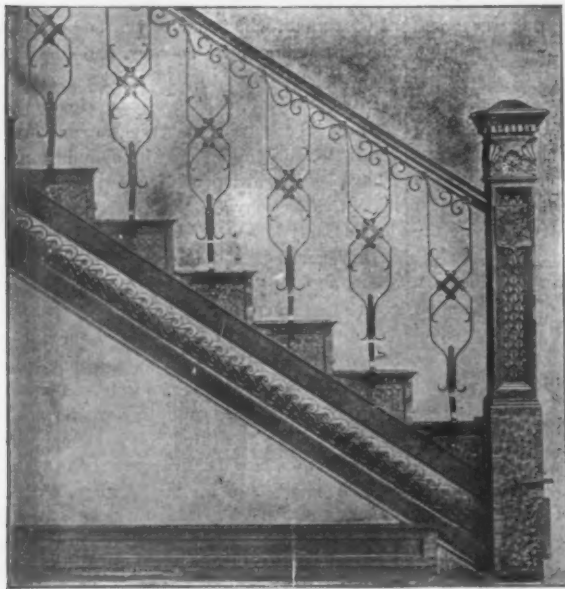
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ADDISON HUTTON, ESQ., Architect.

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REMOVAL NOTICE.

NEWARK, N. J., July 1, 1896.

ON account of rapidly increasing business, we have been compelled to seek larger quarters. We have therefore leased for a term of years, the large and commodious five-story building on Front Street, foot of Centre Street, this city (directly opposite the Centre St. Station of the Penn. R. R. Co.), where we shall be located on and after July 15, 1896.

With increased facilities and the prompt attention which we shall be able to give to all orders, we hope for the continuance of the patronage of our old customers, and to make many new ones.

Respectfully,
THE STORM MFG. CO.,
NEWARK, N. J.

NOTES.

MR. OSCAR LOWINSON, 39 Cortlandt Street, N. Y., is at present engaged in

making a series of tests on the transverse crushing strength of large timbers taken from buildings undergoing alterations, with the object of determining unit values, having especial reference to the strength of existing structures.

My new catalogue of Architectural and Art Industrial Works is just issued, and I will mail you the same free upon application. At your request, I will send you any work you may wish to examine "on approval," and offer you the most liberal terms of payment. Please communicate with me, and I will gladly give you all the further information.

BRUNO HESSLING,
64 EAST 12TH STREET, NEW YORK, N. Y.

THE Flexible Door and Shutter Co., of Worcester Mass., is about to remove its scene of operations to a large and well equipped factory at Bloomsburg, Pa. When that has been accomplished their goods will be mar-

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For economy of operation they are unparalleled by the elevators of any other make or motive power.

In ease and certainty of control, and smoothness of operation, they are superior even to the best hydraulic elevators heretofore made.

GENERAL OFFICES AND WORKS:

**219 South Jefferson Street,
CHICAGO.**

keted from their New York office, 74 Fifth Avenue.

In issuing that one of their series of catalogues which deals with metal-fencing, the Ludlow-Saylor Wire Co., of St. Louis, take occasion to say:

"Most people have an idea that freight rates are very high, but when the truth is known, they find that they have been greatly mistaken. Freight is an extremely small item and we hope that our intending buyers will write us and ascertain the freight rate to their particular place, before they conclude (from misinformation) that the freight on the material would be too much. Owing to the fact that we are located in such a railroad centre as St. Louis, we enjoy the use of much lower rates than any of our competitors. This is an advantage to the purchaser."

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WE wish to call attention again to the examinations which soon will be held by the United States Civil Service Commission for draughtsmen and assistants who desire to secure places in the office of the Supervising Architect of the Treasury. It will be remembered that the experiment was tried a few years ago of making appointments in the Supervising Architect's office through examination. The examination was altogether too strict to suit the taste of the politicians who had hangers-on with a taste for drawing whom they wished to favor with a place at the public crib; and advantage was taken of the passage of a bill appropriating money to pay the expenses of the Supervising Architect's office to attach a clause providing for the employment of temporary assistants without examination. Since then, although the provision was ostensibly made only for a special emergency, the appointments of assistants have been made in accordance with it, and it was not until the promulgation of the President's order of last May, extending the Civil Service Act over the remaining branches of the public service, that definite steps were taken to make all appointments in the office of the Supervising Architect dependent upon qualifications to be ascertained by competitive examination. As, under the Civil Service rules, public servants who are faithful and diligent have little cause to fear removal, but, on the contrary, may look forward to promotion, the Treasury Department, feeling that a body of assistants selected and governed in this way may safely be entrusted with much greater responsibility than can be placed upon men appointed merely through political influence, proposes to confide to them the supervision as well as the designing of the public buildings. As all architects know, the supervision of these buildings has been hitherto entrusted to local superintendents, generally appointed on the recommendation of Congressmen, the Supervising Architect himself only making short and rare visits. These local superintendents have usually been builders, who, even if they should possess the rare accomplishment, among builders, of reading plans accurately and intelligently, were inevitably on such terms of intimacy with the contractors for the building as to make it difficult for them to attribute to the latter anything but the best intentions. Moreover, as the salary of the local superintendent was stopped at the completion of the building, he had no inducement to hasten the work, and the proverbial slowness of building operations carried on by the United States Government probably finds its explanation in part in this circumstance. With superintendents detailed from the office of the Government Architect, familiar with the planning and construction methods of the office, anxious to do their duty faithfully, and quite indifferent to the sensitive feelings of influential contractors, it is reasonable to believe that the conduct of the public building-work may be greatly improved, and the Supervising Architect's office made especially valuable to young architects as a school in which can be gained that

experience in important operations which it is so difficult to get in the earlier years of ordinary practice. As the law requires, notice will be given by advertisement of the time and place of these examinations, and young men of attainments and ambition may do well to be on the look-out for such advertisements. Examinations under the Civil Service Act are usually held in all the important cities, so that it will probably not be necessary for candidates to make the journey to Washington; and persons who would like to be candidates, but fear missing the advertisements, may obtain such information as they need by addressing the Civil Service Commission, Washington, D. C.

SPEAKING of the change which it is suggested that the National Association of Master Builders should make in the Uniform Contract, by substituting "standard gold coin" for "current funds" in the clause describing the sort of money that the contract price shall be payable in, a correspondent observes that in important contracts it is already very generally stipulated that payment shall be made in gold coin "of the present standard of weight and fineness." This is the usual form in mortgages, where payment is to be deferred for several years, and where it is undoubtedly desirable that the lender should be protected against the adoption of such recommendations as that of an ingenious politician, who proposed not long ago to secure "harmony" between the two wings of the Democracy by coining a new gold dollar, of half the weight of the old one; but it seems less necessary in building contracts. However, as the object of the change, if any is made, is to secure payment of the contract price in the same sort of money that both parties had in mind when the contract was made, instead of a cheaper sort, it may be worth while to add a few extra words to put the matter beyond all possible dispute.

THE striking workmen at Cleveland, or rather, their self-appointed leaders, have undertaken a task in which the public has an interest. The Governor of Ohio, finding that citizens were being forcibly prevented from exercising their profession, and were assaulted on their way to and from their work by such overwhelming numbers of men that the police were unable to protect them, ordered some companies of militia to guard them. As the cowardly ruffians who maltreat people for simply trying to make an honest living are in mortal terror of bayonets, this sort of protection proved quite efficient,—too efficient, in fact, to suit the taste of the professional mischief-makers. The latter, therefore, devised a scheme for applying to the citizen soldiers that system of persecution whose cruelty and wickedness have never yet been adequately shown. They notified the people whose action they knew how to control to refrain from buying goods at any store where a militiaman was employed, supposing that the loss of business resulting from this interdict would lead to the discharge of the military man. Fortunately, the edict of the walking-delegates, terrible as it is to the poor workmen who cannot escape its execution, presents no such aspect to the ordinary citizen, and as the latter likes to think that a man with a rifle on his shoulder, and a stout heart in his bosom, is ready on occasion to defend decent people against howling assassins, the result of the attempt seems to have been to direct the favorable attention of six-sevenths of the population of Cleveland toward the men whom the other seventh were persecuting on account of their faithfulness in fulfilling the most sacred duty that a man can take upon himself,—the protection, at the risk of his own life, of innocent people against violence.

A MOST discreditable story is reported from New York. It will be remembered that, a year or more ago, one Oberfield, who has become notorious for the cruelty with which he uses his power as a walking-delegate, to serve his private ends, and who had already been indicted by the grand jury for his acts, took a grudge against a carpenter named Alexander Douglass. It seems that Douglass was a member of the union, in good standing, and his sole offence was that he opposed Oberfield's election as walking-delegate, but for this Oberfield relentlessly hunted him out of shop after shop, until, in despair, he applied to the courts for relief. On the evidence presented, the grand jury indicted Oberfield a second time, and the indictment was turned over to the District Attorney for prosecution.

Notwithstanding the indignation which the publication of the circumstances aroused, the indictment appears to have been stowed away in a pigeon-hole in the District Attorney's office, and to have been left there ever since. Meanwhile, Oberfield, enraged that Douglass should dare to bring his troubles before the courts, has taken advantage of his impunity to redouble his persecutions. About six months ago, Douglass's wife came to Mr. McIntyre, then Acting District Attorney, in great distress, saying that, in consequence of his complaint against Oberfield, her husband had been unable to get any work; that their children were starving, and that her husband had become so despondent that she was afraid he might take his own life; and she begged that something might be done to relieve him from his tyrants, and give him a chance to earn his living. Mr. McIntyre, who knew that this was not the first instance in which justice had been similarly delayed, called for one of his subordinates, and ordered him to bring the case to trial at once, saying, as the *Evening Post* reports, "It is a standing shame and disgrace that nothing should be done about these labor-union cases. When I see poor people like this woman despairing of ever securing justice from these courts, I often wonder whether some time their burden may not prove too much for them. I should not wonder if some time we should wake up to find the Criminal Court building surrounded by a mob of poor people from the East Side and other places, clamoring for justice and for vengeance against their criminal oppressors." Notwithstanding this energetic expression on the part of the Acting District Attorney, of sentiments which seem to be generally shared by judges and others who are likely to know most about such matters, nothing was done about bringing Oberfield to trial, and from that time to this, his indictment appears to have reposed quietly in its pigeon-hole, in company with a number of others of the same nature, which is increased from time to time by new additions.

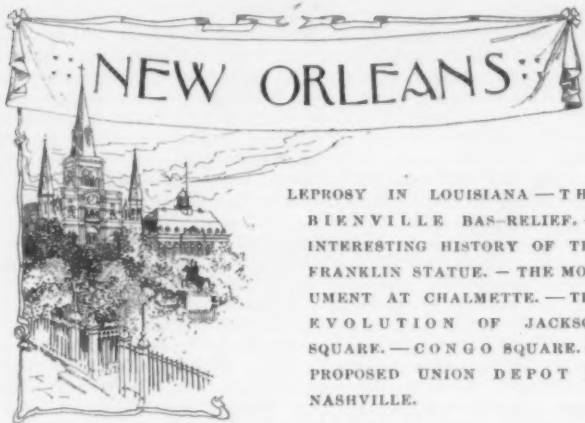
IT would not be fair to accuse Mr. McIntyre of insincerity in the matter. Both he and his superior, Colonel Fellows, seem to be really anxious to have justice done, and the latter is said to have given strict orders this summer, before leaving the office for his summer vacation, to have all these cases put on the calendar for immediate trial; but the details of the work of the New York District Attorney's office must be intrusted to subordinates, and some of the latter seem to use their own discretion about carrying out the work assigned them. The *Evening Post* points out that the assistant who has charge of the Criminal Court calendar was, before receiving his appointment in the District Attorney's office, counsel for several of the most prominent labor unions of the city, and is said still to maintain a connection with his former clients, and suggests that this circumstance may furnish "a possible explanation" of the disposition made of indictments against union conspirators. Another "possible explanation" of the matter is that this particular case, among others, is said to have been assigned to a different assistant, who, after unsuccessfully trying one, abandoned all the others, and has gone away on a long vacation. Whatever may be the true reason for this denial of justice to citizens whose living depends upon securing the protection that they seek, there can be no doubt that the difficulty should be remedied at once. If the grand jury cannot prevent its indictments from being hidden away indefinitely in pigeon-holes by irresponsible assistant District Attorneys, the Bar Association could apply salutary discipline to attorneys proved guilty of delaying justice, either negligently or intentionally, or one of the citizens' associations which have done so much for New York might take up the matter.

THE O'Brien case of the display of the Irish flag on a school-house in Massachusetts, in derogation of the dignity of that Commonwealth, was tried in the court of first instance a week or two ago. It will be remembered that O'Brien, the contractor of the building, maintained, through his counsel, that as the structure was incomplete, and had not been delivered, it was not yet a public school-house within the meaning of the statute; and, at the trial, the point was also raised that, as Ireland was not an independent sovereignty, the green flag of Erin was not the emblem of a foreign country, such as the statute refers to. The judge of the police court decided adversely to the contractor on both these points, and ordered him to pay a fine of ten dollars. An appeal was taken, and Mr. O'Brien will, apparently, have the pleasure of paying

for the discussion of historical as well as legal problems before the higher courts.

NO one can read German novels of the present day without being struck with the important part that forests play in these representations of what is probably, in such matters, the real life of the German people. Everywhere we find the distinguished Baron, or Count, or Freiherr, whose enormous wealth is surpassed only by his still more enormous pride, drawing a large part of his income from his forests. The poor young relative, who occupies an almost menial position in the household, and who afterwards turns out to be the rightful heir, and carries off triumphantly the maiden with the flaxen braids for whom he had so long sighed in secret, almost always begins his inspection of his new domains by a visit to the Försterei, where he confers with the forester and his subordinates in regard to the disposition of the large and steady income proceeding from this part of the estate. Moreover, the Försterei itself is usually described as a well-built and roomy house, in which the lord of the manor is not himself ashamed to lodge on occasion, while its occupant and his family are generally on terms of friendship, if not of intimacy, with the noble personages at the castle, who regard them as the conservators of the most easily managed, and most steadily profitable portion of the estate. Turning from these pleasant pictures of aristocratic affluence maintained for centuries by the income from a few hundred acres of well-kept forest land, to our own country, what do we see? We have woodland enough, certainly, but no one, as a rule, laughs more bitterly at the idea of obtaining an income from it than the owner. Far off in the North, the great tracts of virgin forest, the only woodland which is considered among us to have any value, are systematically denuded by the railroads or lumber companies, who strip off everything that can be turned into a joist, or clapboard or shingle, and leave the place bare. This done, the land is either left desolate, or, if well situated, is sold for a trifle to a farmer, who digs up the stumps with immense labor, ploughs and harrows the ground, and sows it with wheat. For a few seasons the wheat returns him fifteen bushels to the acre, and he sells his crop at a price so low that it can be transported five thousand miles to Liverpool, and sold there in competition with Argentine wheat, raised by half-naked savages on the fresh prairie soil bordering the La Plata River; a sale at this low price being the alternative to not selling it at all. After a generation of this sort of husbandry, the land, unfertilized, refuses to produce any more wheat, and the farmer abandons it, and moves to a fresher soil. Then persevering Nature asserts itself, and little crooked trees begin to spring up, in the place of those which had been cleared away. Singularly enough, land that has reached this condition, in which a German forester would see the promise of future wealth, is execrated by our farmers as worse than useless. Many thousands, perhaps millions, of acres of land in the United States, covered with small oak and pine trees, could be bought for a few cents an acre; yet nothing is more certain than that these small oak and pine trees will before many years grow to be large ones, and that, as the virgin forests are cut away, and the demand for timber grows more pressing, every tree will bring its price. What the price will be depends upon the care which is taken of it during its growth, but it is not too much to say that with even ordinary attention to the obvious needs of forest land, the sand-hills of Massachusetts and Michigan, or the barren pastures of Virginia, would bring to a family that had the patience to wait, an average income far greater than those Kansas or Nebraska can count upon from the same quantity of land; an income, too, which would be independent of drought or rain, which would not be in danger of interruption by the exhaustion of the soil, or through any other mischance, except fire, which has few terrors for scientific forestry.

THE Province of Quebec Association of Architects sends us a remarkably pretty circular, announcing an "Architectural and Arts and Crafts Exhibition," to be held in the galleries of the Art Association, Phillips Square, Montréal, commencing on Thursday, October 8, 1896. Exhibits of framed architectural drawings, or sketches, carvings in stone or wood, artistic metal and glass-work, and so on, will be received up to September 24. Further particulars may be obtained from Mr. Joseph Venne, Secretary of the Association, 17 Place d'Armes Hill, Montreal.



LEPROSY IN LOUISIANA—THE BIENVILLE BAS-RELIEF.—INTERESTING HISTORY OF THE FRANKLIN STATUE.—THE MONUMENT AT CHALMETTE.—THE EVOLUTION OF JACKSON SQUARE.—CONGO SQUARE.—PROPOSED UNION DEPOT IN NASHVILLE.

TO the various ills to which the Louisianian is liable, the French Acadians over a century ago contributed leprosy, of a type differing from the Oriental. Attempts to check its spread began while Louisiana was a colony and have continued spasmodically ever since; but despite these, the dread malady has steadily increased. In 1894, in response to the agitation of the subject by medical societies and the public press, an act was passed by the Legislature creating a Board of Control and providing for the establishment and maintenance of a Home for Lepers. At once, strange to say, opposition to the measure was aroused in New Orleans, where for years no restrictions had been placed upon lepers travelling in street-cars, eating at public restaurants, or begging on the thoroughfares. There was, to be sure, a contract hospital of some kind for lepers in New Orleans, but that is even now under the censure of the city authorities. The opposition resulted in the refusal of the City Council to sanction the erection of an Asylum for Lepers within the city and the site selected for that purpose had to be given up. The Board of Control finally secured a lease for five years of the old Indian Camp Plantation in Iberville Parish. The opposition of the inhabitants of Iberville Parish threatened the existence of the Home for a while, but the Board went pluckily to work, put the cabins on the plantation in sufficient repair to accommodate the lepers and erected new buildings; and on the 30th of November, 1894, a number of lepers were taken by night, upon a coal-barge towed by a tug, from New Orleans to the Home. Since then others have been received, until an aggregate of thirty-one was reached before the 1st of May, 1896. Of these, four have died; of the others, the condition of nine is reported to have been improved. The sympathies of some of the ladies of New Orleans have been enlisted; the aid of the Sisters of Charity has been called in; and every effort is being made, by correspondence with coroners, sheriffs, boards of health and local health officers, to obtain reliable information regarding the number of lepers at large in the State, that they may be located and legally committed to the Home. By cooperating with boards of health in neighboring States, by isolating the cases and caring for them, it is hoped eventually to eradicate leprosy wholly from the State of Louisiana. The State appropriated \$5,000 for the improvement of the grounds and buildings and \$10,000 annually for the maintenance of the Home.

A bas-relief of Bienville, in the Marble Hall of the Custom-house, escaped the attention of your correspondent a few months ago as he was enumerating the public statues of the City. The man who laid the foundations of the City of New Orleans, who made it the capital of the province, and who repeatedly came to its assistance when it got into trouble, is represented in the costume of a Canadian voyager or hunter. No other portrait or statue of him exists in the city.

There is an interesting incident to be related of the Franklin statue, also recalled since the former letter was written. Both the Franklin and the Clay statues were modelled by Hiram Powers, and it is asserted that the former was an important factor in the life of that famous sculptor. In 1843 Powers was having a struggle for existence, and New Orleans considered itself one of the art centres of the New World. Becoming interested in the new sculptor, some of the citizens organized a club for his relief, raised about \$12,000 and sent it to him in Rome as payment in advance for a statue to be made of any subject he might select. It was not until 1869 that the memory of this agreement with Powers was revived. Then Powers executed this statue of Franklin and shipped it to New Orleans. It arrived in troublous times and was mislaid in the Custom-house. When discovered, it was advertised for sale, and rescued by a public-spirited journalist. Meanwhile the pedestal had been lost at sea, occasioning another delay, and so it was not until 1873 that the statue was placed in position. Powers once executed a statue of Washington which the State of Louisiana purchased after the sculptor had acquired fame. It was among the spoils of war sent to Washington by General Butler, and when Congress returned it to Louisiana, it had the misfortune to be destroyed by fire.

In 1896 a monument was begun on the Plains of Chalmette, in commemoration of the great battle fought there in 1815. It marks the spot where Pakenham fell, and was intended to rival Bunker

Hill Monument, whose design it copied. The State purposed defraying the cost of the monument and made a handsome appropriation at first, but it was less generous afterwards, and finally suspended its appropriations altogether. As a consequence, the brick tower with marble facings was allowed to fall into decay after it had arisen to the height of about forty feet. It is now a melancholy sight to visitors. The completion of the "Jackson Monument," as it is called (it is intended to be commemorative of the Battle of New Orleans), is one of the works of public interest which have engaged the attention of the ladies of the Crescent City of late. They are likely to push the work forward to completion, though perhaps not in the immediate future.

Clark Mills's equestrian statue of Jackson proved the occasion of an architectural revolution in its neighborhood less than half a century ago, the circumstances of which should be made a matter of permanent record. The revolutionary leader was Madame Montalba, a native of New Orleans, but a Parisian by residence prior to 1848. In the revolution of that year, she discarded her title of nobility, set aside her legitimist sympathies and sought refuge in her native city from the political troubles of France. She brought with her considerable wealth, and an ardent admiration for Andrew Jackson. Immediately upon her arrival she proposed the erection of a statue in the Place d'Armes. She started a popular subscription by which funds for the statue by Clark Mills were raised. Then began the architectural revolution above referred to. In the face of opposition raised by the newspapers of that day, the trees in the Place d'Armes were cut down, a garden was laid-out and the square was renamed "Jackson Square." The rows of old buildings on either side of the square, some of them dating from the foundation of the city, were torn down and the present existing buildings, after Parisian models, were erected and named the Montalba Buildings. But the least admirable of the Madame's "improvements" was the replacing of the original Spanish front of the Cathedral with the present façade. The Madame bore the expense of this, as well as the brunt of many adverse criticisms upon the changes. The visitor in New Orleans who supposes, as he stands in Jackson Square, that he is surrounded by monuments of the remote past, is in error. Only the two buildings which flank the Cathedral are relics of the early days of the city; and it is proposed to condemn and rebuild these.

The former name of Jackson Square, when discarded, seems to have assumed the form of unemployed municipal property, to be disposed of or utilized by an economical city Government, whenever occasion arose. On Orleans Street is a square known as "Congo Square," because in the early days the Congo negroes were accustomed to meet there on Sundays from sundown until nine o'clock, and indulge in their wild music and dance the *hamboula* and *coonji*. When this use of the square was broken up, the neighboring residents desired that its name should be changed. The city authorities at once passed an ordinance that it should take the discarded name of "Place d'Armes." But this and several later attempts to change the name of the pretty little park have all failed, and it remains to this day, in the popular mind, "Congo Square."

News comes from Nashville, Tennessee, of the proposed erection there of a Union Depot, to cost not less than \$650,000. It is a greatly needed improvement of that city. The ordinance permitting the building passed the city council, but was vetoed by the mayor, which means delay until an ordinance can be framed and passed which will embody views on that subject held by the Mayor of Nashville and a large body of its citizens.

THE ART OF BRONZE CASTING IN EUROPE.—III.

OF the other Florentine bronze founders of that period, we need only mention John of Bologna, who, in truth, was not a Florentine, but a native of Flanders, said to have been born in 1530: Perkins thinks probably some years later. Amongst other works in bronze he cast a colossal Neptune for the fountain at Bologna, and some years later the flying Mercury, the Grand Duke Cosimo, in the Piazza della Signoria, and the equestrian statue in the Piazza della Annunziata, both at Florence. This last is a very inferior work, and it is believed that John of Bologna had little hand in it. It was cast by his pupil, Pietro Tacca, who probably also did most of the modelling. John of Bologna died in 1608.

The erection of equestrian statues was coming into fashion, not only in Italy, but in France and other countries. In 1604, an equestrian statue of Henri IV was commissioned of John of Bologna, but it was not finished before the death of the artist and the assassination of the king. It was, however, finished and cast in bronze at Florence, I know not by whom, probably by Tacca, and was transported to Paris and erected on the Pont Neuf in 1616. The next equestrian statue that I have any note of is one of Louis XIII. It stood in the Place Royal, and was erected in 1639. The horse was by Daniele di Volterra, and was intended for a statue of Henri II, but the artist dying in 1556, he could not complete the figure of the king. It was afterwards utilized for the statue of Louis XIII, the figure being completed by a sculptor named Biard. I have never seen a representation of this work.

The most important casting ever made in France, or perhaps in any other country, was that of the statue of Louis XIV by Girardon, and cast in bronze by the celebrated founder, Jean Baltazar Keller,

¹ A paper read before the Society of Arts by Mr. George Simonds and published in the *Journal of the Society*. Continued from No. 1074, page 31.

in 1699. M. Boffrand, the eminent architect, was instructed to take notes and to make drawings of the entire process, and these form a most valuable addition to the literature of bronze casting.

I propose now to describe the method of procedure which proved entirely successful for the casting of this great work, alluding from time to time, as may be convenient, to works by other artists who may have used other means to the same end.

This statue exists no longer. It was destroyed with many others in the French Revolution. It was of great size, measuring twenty-one French feet, or about seven metres in height. The statue was modelled in plaster, on the site where it was to be cast, in a temporary studio erected for that purpose. When the work of modelling was completed, the entire statue, horse and rider, was piece-moulded in plaster. This was not, however, an ordinary piece-mould, but rather an erection of regular-shaped blocks of plaster, of such size and weight as to be easily lifted by hand. This very complicated mould was regularly built up in courses like masonry, each piece being keyed to its neighbors, until the entire statue was built-in. The blocks, which were all carefully numbered and counter-marked, were then removed one by one, and each lined with wax. This was first painted on with a brush, which, in my opinion, was a mistake; and when a very thin layer was thus obtained it was backed up by sheets of wax, rolled out to the required thickness, which varied according to the position, some of the parts being very thick indeed. The next point was the arrangement of the iron frame for the support of the core. This was a very complicated construction, and was all fitted together with cramps, so that it could be taken to pieces and removed, together with the core, through an opening or man-hole on the back of the horse. The irons of the legs, however, were intended to remain inside. The framework was erected above a series of flues or fireplaces, of which the use will be shown hereafter. An iron grating, which was to form the base of the waste mould, was laid over these flues, and upon this the piece-mould was erected, course by course; the iron framing was built up, and the core was being made at the same time, so that, when the plaster mould was entirely built up and restored to its proper position, there was on the outside: first, the plaster mould; next to that, a lining of wax representing the bronze; and within that again, the core, which enveloped the iron framing by which it was to be supported.

There are many ways of making a core, but they may be divided in two classes, viz., beaten cores, that is to say, such as are composed of some material that can be beaten or rammed into a cavity, from which it receives the required form; and cast cores, or such as are poured into the cavity in a fluid state, and are then allowed to set and solidify.

Beaten cores are the safest, but cast cores are the most convenient to make. In this case both kinds were used. The legs of the horse that touched the ground were to be cast solid a considerable way up, and being full of wax and irons needed no coring. The tail, part of the neck and head of the horse, the raised legs, and the body, head and arms of the king were cast cores; but for the legs of the king and the body of the horse a beaten core was used, which was composed of two parts of loam and one part of horse-dung mixed with cow-hair beaten well together with iron rods, and sufficiently moist to be fairly plastic.

The workmen, passing their hands into the body of the piece-mould between the irons of the frame, plastered the wax shell with a layer of this loam about one-half inch thick. This was carefully

dried and other layers were added, until the lining covered in all the irons of the framing, it being then about six inches thick. Bricks of the same material, that had been prepared beforehand and well dried, were now used to increase the thickness, using the same loam in a more fluid state as mortar, until the body of the horse was fitted with a sort of vault, open only at the man-hole in the horse's back. In this vault braziers of charcoal were kept alight until it was perfectly dry. Previously, however, the body, head and arms of the king, as well as the raised legs, head, neck and tail of the horse, had been cored by pouring into them a mixture of one part of brickdust and two parts plaster in a liquid state.

Through the body of the king three small chimneys had been formed leading from the body of the horse to the open air above. This is the first record I have ever found of a lantern and core-vents, and yet, strange to say, they were not intended to be used as such, for, as the core dried, fresh layers were added, and the whole was finally filled up to a solid mass — a very great mistake in my opinion.

It would be tedious to enter into every detail concerning the construction of the core. I have merely stated the broad fact. The next operation was the removal of the plaster mould together with the wax, so as to expose the core to view. The latter was then

examined to detect any cracks or other imperfections, and after these had been remedied, the lower parts of the core were further secured by a network of iron wire, and the wax was then, piece by piece, replaced in position on the core, to which it was secured by copper tacks, whose heads were buried in the thickness of the wax, and their points driven into the body of the core. When all the pieces of wax had been thus fixed in their proper places, the next thing was to retouch the wax. This must have been a very troublesome job, owing to the method adopted for covering the core; indeed, we are told that it took M. Girardon a whole year to repair. The wax now being retouched, and the entire statue being absolutely finished, the next process was the distribution of the jets, vents and spouts or drains.

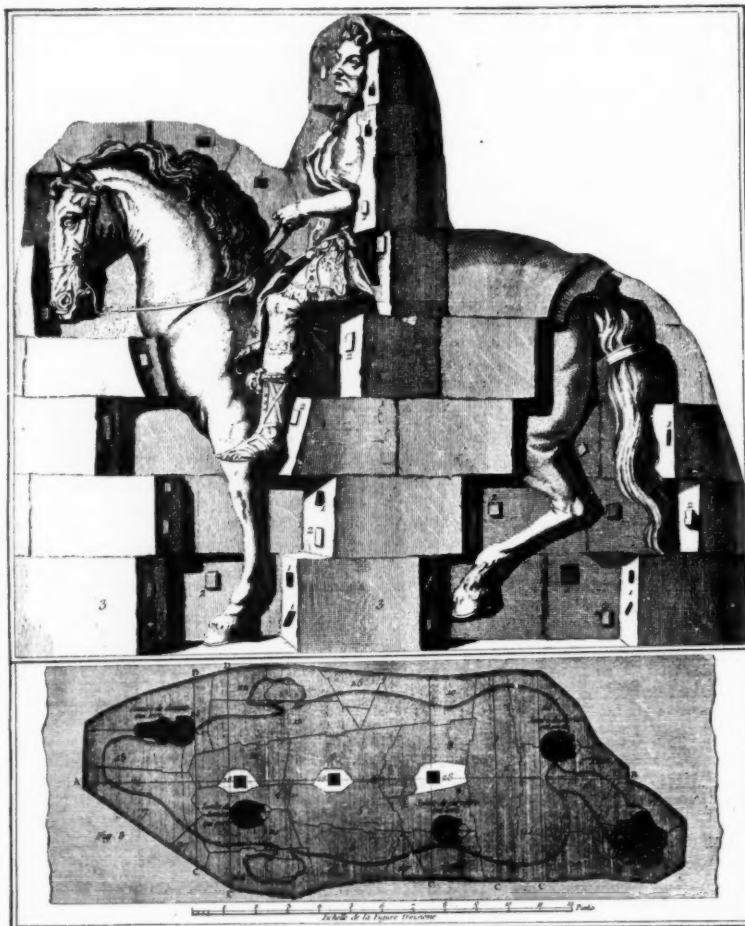
For the benefit of those who have no knowledge of these things, I may as well say that jets, also called runners, are the pipes by which the molten bronze enters the mould and is conducted to its remotest parts. Vents are air-pipes leading from the cavity of the mould to the outer air; their function

is to permit a free and rapid exit of the air and gases which would, without such exit, impede the free flow of the metal, and in all probability burst the mould. The spouts, or drains as they are called, are also pipes leading from the interior of the mould to the open air. Their function is to carry off the wax as fast as it is melted inside the mould, as, if no exit were provided, it would, as the heat increased, boil inside the mould, which would destroy its surface and yield a very bad casting. These pipes are merely sticks of wax of varying thickness, according to the requirements of the case, and they are attached to the surface of the wax model by soldering them in place with a hot iron.

There are two opposite principles employed for the arrangement of jets and vents, known as the ascending and the descending principles.

The oldest and commonest principle is the descending, which has many disadvantages, and very little to be said in its favor. It consists in pouring the metal directly into the mould through one or many jets which distribute it to all parts of the mould. It enters the mould from above, and it is claimed that the mould is most quickly filled by this plan.

The other, or ascending principle, has, in my opinion, many



Original Model of Girardon's Statue of Louis XIV and the Plaster Piece-mould. From Diderot's "Encyclopédie."

advantages. On this principle the jets are so arranged that the metal enters the mould from its lowest point, having descended through runners, from above the head of the statue, and rises, on the principle that fluids will find their own level, forcing air, gases and everything else in front of it, until the mould is full. This, no doubt, is the slower plan, since the metal has just twice the distance to flow, but it causes, in my opinion, far less disturbance inside the mould and does not necessitate so many jets and vents.

One of the bugbears of an inexperienced founder is the fear that he will not be able to get his mould filled before the metal is too cold to run or take a sharp impression, and yet, as a matter of fact, more bad castings result from too much heat than from too little. An inexperienced hand is always ready to attribute a mishap to the evolving of the metal inside the mould. Probably his mould did not fill because he had not vented it properly and an air-lock was the result, or if the casting is not sharp it is probable that he has either burned his alloy or that his mould was bad. It is not, in all probability, the result of casting cool.

However, MM. Girardon and Keller decided on adopting the old-fashioned descending process, and placed their jets and vents accordingly, the jets all pointing downwards and the vents upwards; the spouts, of course, led downwards. When all this was completed the next operation was the construction of the mould itself, together with the walls of the so-called pit, in which it was to be cast, not to forget the furnace to melt the metal.

The soil was so damp in Girardon's atelier that it was considered unwise to dig a pit for casting, as is the usual custom; so the plan adopted, and I believe for the first time, although it has often been done since, was to build a strong wall all round the mould and conduct the whole operation above the floor-level of the studio. This wall would rise to a height of three or four feet above the top of the mould, and the mouth of the furnace would have to be a little higher than that. The furnace, therefore, in this case will have been about thirty feet above the ground-level.

The construction of the mould was as follows: Three parts loam of Chatillon, two parts powdered crucibles, one part horse-dung. This mixture was mixed with white of egg and ground on a stone until it was of the smoothness and consistency of oil paint, when with soft brushes

a first and very thin coat was given over the entire surface of the wax, jets and vents included. When this first coat was entirely dry a second was laid on in the same manner and also allowed to dry, and so in this way twenty-four coats were given and dried; after this the same mixture was beaten up with cow-hair and other layers added, until a thickness of about two inches had been reached. This required about forty coats.

As the mould could no longer be trusted to support itself, a sort of net, made of hoop-iron, was placed under the horse's belly and attached above to the irons that supported the core; a like bandage was put round the body of the king, and, indeed, wherever it seemed advisable to strengthen the mould. After this, fresh layers of loam were added to the mould, until it had received about 150 in all, and was about eight inches thick, or rather more. After the mould had been brought to this state, it was entirely enveloped in a lattice-work of bands of irons, shaped to the mould, and secured to the grating on which the latter rested. This lattice-work was again covered with loam, and in the case of the legs and tail of the horse a second lattice of iron was added, and covered with loam and terra-cotta tiles, in order that it might be the better protected from the fire. The mould was now about ten inches thick at the base, and seven or

eight inches at the top. The next operation was melting out the wax, and firing or cooking the mould. This was a matter of very great difficulty, owing to the immense size of the mould, the largest in fact of which we have any historical record. The following was the plan adopted: A kiln, which the French call *le mur de recuit*, was built of fire-brick around the mould, rising from the flues which I have already mentioned as being below the statue. This kiln was shaped as far as possible to the form of the exterior of the mould, from which it was distant about eighteen inches, this being considered sufficient for the fire space. As the kiln was built up, it was filled above the flues with bricks laid in such a manner that there was a space of a couple of inches between each, and others laid above, so as to form a sort of open-work to allow free passage to the flames. After three courses of brick had been laid in this manner, the space between the mould and the kiln was filled up with broken pieces of brick thrown in loosely so as to leave ventilation for the fire. When the kiln had been carried above the level of the top of the mould and filled as described with broken bricks, it was covered in at the top with a layer of clay about three inches thick, in which, however, several small chimneys had been made, without which the kiln would not have been workable.

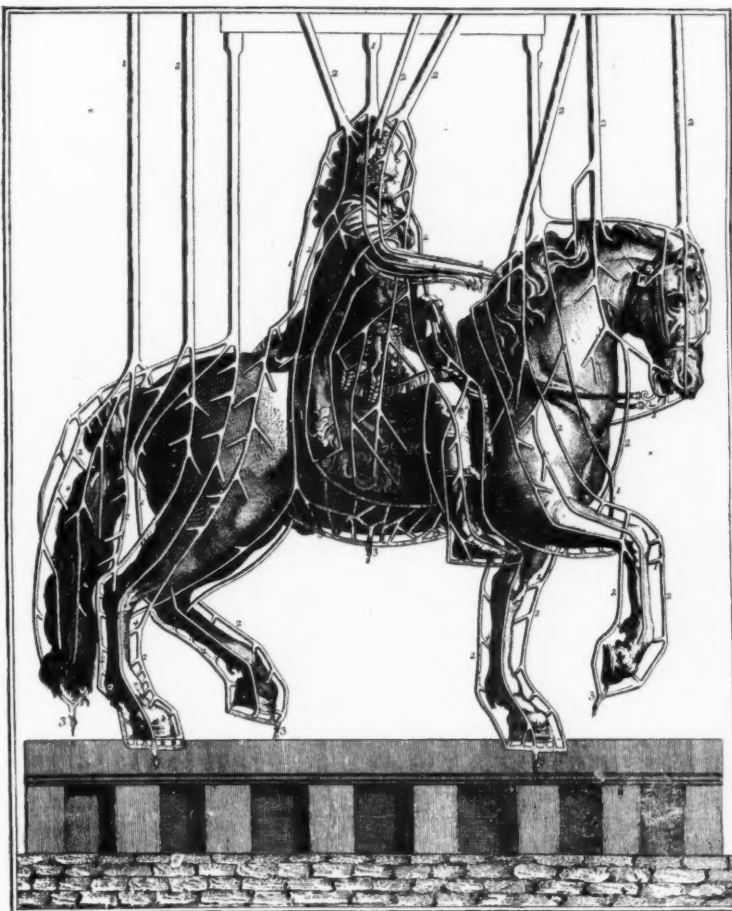
The fire was now started in three flues on each side, and after twenty-nine hours two more were started, and so on, with others, until they were all in work. This firing was with charcoal, and was continued for nine days and nights, after which time the wax, which had begun to come away after the second day, ceased to flow. Of 5,668 pounds of wax which were used for this statue, 2,805 pounds were drawn, so that there remained absorbed by the mould 2,765 pounds to be evaporated and burned off before the casting could be made.

To the charcoal fires a few billets of wood were now added, and the heat gradually raised for the space of eight days more, after which time wood only was used, and the fires were well maintained for seven days. Then the whole of the interior of the kiln, being at a full red heat, the flues were closed, and the mould was left to cool for eight days, after which time it was sufficiently cool to permit the kiln to be taken down.

This account gives us nine days for drawing the wax, eight days for raising the fire, and seven days more to bring the kiln and its

contents to the proper heat, and another eight days for the mould to cook after the kiln had been closed. In all thirty-two days, and none too much when we remember the size of the casting; and here I wish to say that firing the moulds is the one great difficulty in waste-wax casting. You cannot fire too slowly. The mould and the core, to its very centre, should be brought to a good cherry red, but no more; neither should the outside be hotter than the inside. In order to arrive at this result, a gentle fire, long continued, is needed. A strong, fierce fire only injures and destroys the mould—cracking, tearing and warping it in every direction; over-firing is the cause of as many, if not more, failures than under-firing; and no fuel is worse to use than coke, on account of the great heat, and also of the sulphur it contains. A fire of soft charcoal, or of wood, is the best and safest.

The mould being now properly cooked, the next thing was to remove the kiln, and everything else, and clear out the pit, so that it contained nothing but the mould. The spouts from which the wax has been drawn were now carefully closed with loam, and the earthing-up was proceeded with. The flues, which were directly underneath the mould, were fitted up solidly with masonry, and the pit filled-in with earth—thrown in to a depth of about six inches,



Girardon's Statue of Louis XIV after casting and before the Gates [metal that solidifies in the vents and jets] had been trimmed away. From Diderot's "Encyclopédie."

and well rammed down in every part before another layer was added; and so on, until the highest part of the mould was reached. A small quantity of plaster was sifted amongst the earth thus used, in order that it might take up any dampness and prevent it from affecting the mould.

The next thing was the construction of the basin, or dam, to contain the metal when released from the furnace. This was made of an oblong shape, of beaten loam, the sides being bricked and plastered with loam. From the mouth of the furnace a trench led with a gentle fall into the dam, and from the bottom of the dam proceeded the three principal jets. The mouths of these three jets were funnel-shaped, and were stoppered with carefully fitted plugs at the end of long iron rods, so arranged that, by means of a lever, they could be simultaneously withdrawn at a given signal.

Sometime previous to the completion of these last operations the furnace was started, with a charge of 83,752 pounds of metal, being part old cannon, part ingots of red gun-metal, part yellow brass, and about 2,000 pounds of fine Cornish tin, besides a mass of old metal that had been used in the arsenal many years before. The fusion of this large charge took forty hours in this furnace—of which I am pleased to be able to show you some illustrations—after which it was tapped and the entire charge allowed to flow into the dam. The plugs having been withdrawn by means of the lever, the bronze went down quite quietly into the mould, rising in all the vents up to the level of the flooring, a sure sign of a successful casting. The weight of metal taken up in the statue, and its jets and vents, was about 60,000 pounds; the remainder was left in the dams. After four days the work of digging out the pit was begun, and the statue was found to be quite perfect. There only remained now to cut off the jets and vents, and to chase over the places where they joined the statue; also to remove the core, and, as far as possible, the iron also, through the man-hole at the back and the other smaller apertures that had been provided for that purpose. To close these holes, pieces had been made of wax, carefully fitted and then removed, and placed amongst the jets in such a manner that they should be cast at the same time as the rest of the work; after which repairs, the statue only required to receive a patina, and was ready for use.

Such, then, is the history of the greatest piece of bronze casting of which we have any record in Europe, for although there are several other bronze statues that far exceed this in height, and, indeed, rival the colossi that were erected by the ancients, yet these were all cast in sections and fitted afterwards.

There is, I believe, no record extant of the casting of Le Sueur's fine statue of Charles I, which is a pity, for it would be very interesting to know if it is, as I suspect, a wax casting.

Chantrey, I believe, used to cast his own statues, and I have been assured that he used to cast them in piece-moulds made of plaster and brick-dust in equal proportions. I know that this method has been employed by sculptors, but it is more in the nature of a makeshift than a process to be recommended, since a good loam piece-mould will be more likely to give good results.

When piece-moulding for bronze with plaster brick-dust, the mould should be thickened up with sheets of tallow or dough rolled to the required thickness, and the core irons having been prepared and placed in position, the core, also of plaster mixed with brick-dust, must be poured in and allowed to set. After this the mould must be taken to pieces, and the core removed and thoroughly dried and baked, as must also be the various pieces of the mould. They do not, however, require the same degree of heat as in the wax process. After they have been well baked they must be put together, buried in the earth, and cast as soon as possible. The jets and vents are

cut in the material of the mould, in the same way as in the ordinary loam piece-moulding.

Amongst other equestrian statues cast by the wax process, I may mention Louis XV, by Bouchardon, and the celebrated statue of Peter the Great, by Falconet. This last was cast by the sculptor himself, without the aid of a professional founder, and under very great difficulties. This casting is remarkable for being, in the fore-part, where lightness was most essential, perhaps the thinnest casting for its size in existence. In our own day many fine equestrian statues have been produced in England and elsewhere. Marochetti, I believe, was the last sculptor in England who did his own casting; but I do not know if his methods had any particular interest.

Foley's statues, such as his General Outram, were all cast in pieces, by the usual loam process, which seems to me, when properly and skilfully carried out, to be sufficient for the purpose.

In this survey of bronze casting in Europe, I have been obliged to omit all mention of much admirable work that has been done in Germany, and in Holland and Belgium, in which last country I got my first lessons in bronze casting, in the studio and foundry of the Chevalier Louis Jehotte, at Brussels, when I assisted him in modelling and casting the monument of Charlemagne, afterwards erected in Liège. This was entirely cut to pieces and cast by the loam process. In Italy they still, in spite of the great cost, keep to the wax

process for almost all their public monuments, of whatever size; and I am pleased to show you one that was cast entirely at one pouring, about twenty years ago, by Papi, of Florence, for the sculptor Balzico.

I do not recommend the establishment of large foundries in England for waste-wax casting. It is essentially a process that should be used for the production of small, rather than large works; and although Papi cast one of my own works, of colossal size, by this process, I do not think that, as a rule, the game is worth the candle; and I should always employ the piece-mould, as being much cheaper and quite as successful. For work up to life-size, however, and especially for smaller work, where the touch of the artist is of great importance, I should always use the waste-wax process.

There is all the difference between a statuette cast from the wax by an artist and the same thing cast in a piece-mould in the ordinary way that there is between an original painting and a chromo-lithograph. The one may be worth more than its weight in gold, the other is hardly worth more than its weight as old brass. On the other hand, it is not the wax process alone that gives value to the work; the design may be admirable, and the artist amongst the greatest; but if he allows inferior workmen in a foundry to retouch the waxes and repair and chase up unsuccessful castings, then the work ceases to have artistic value, and is no longer an original autograph work, but simply a commercial copy.

It will be an excellent day for English sculpture, and I think that day is not far distant, when the public will insist on autograph work, in small bronzes at least. These may easily be cast with few appliances and in a very small studio. This is a bronze from the wax sketch of my marble statue of the Queen, which I cast in a corner of my own studio. It is left exactly as it came from the mould, and has not even received a patina; only the jets and vents were removed. I merely mention this to show that it may easily be done, and I hope the time may soon come when artists will again take their proper part in the advancement of bronze casting in Europe.

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AN HISTORIC BELL.—The historic bell in the tower of St. John's Episcopal Church, Portsmouth, N. H., is to be recast, having recently been cracked. The bell was captured at Louisburg by the expedition under Sir William Pepperell. In 1806 it was recast by Paul Revere & Sons, of Boston, and has hung in the church tower since that time.—*Philadelphia Telegraph*.



Section of Mould and Kiln for casting Bouchardon's Statue of Louis XIV. From Diderot's "Encyclopédie."

ASBESTOS.

NOTWITHSTANDING the wide distribution of asbestos, the only varieties which at present appear to demand serious consideration, from a commercial point-of-view, are the Russian, the South African, the Italian and the Canadian. The principal claim possessed by the Russian fibre to a place in the quartet is based on the enormous extent of the deposits which have been discovered in East Russia, beyond the Ural Mountains, and Russian Siberia. So far, their specimens have been of comparatively poor quality. The yield is used almost entirely in Europe, where it is mixed with the Canadian for spinning, making paper, and other purposes where an inferior grade can be utilized.

Before the development of the Canadian fields, the Italian asbestos was supreme in the market. For nearly twenty years Italy has been looked to for the best grades of the fibre. From a point on the northern mountain slope of the Susa valley is taken the floss asbestos fibre, the appearance of which in gas-stoves is so familiar. In the same locality is found a fine white powder of asbestos, which serves for paint and other purposes. The mining is carried on at a height of from 6,000 to 10,000 feet above sea-level.

But the Italian asbestos industry, once so important, is already on the down grade. The difficulties of mining are very great, and unduly increase the cost of production. The asbestos itself, judged by the latest standards, is of inferior quality; it is not easy to spin, and it does not pulp well in the making of paper. The best grade is extremely rare, and its cost of mining and transportation is prohibitive. The supply from the Italian mines is rapidly falling off. As a matter of fact, Canada contains the great asbestos region of the world, in the sense that while its mines are practically unlimited in productive capacity, the product is of a quality which fully meets the requirements of the newest and most exacting of the innumerable uses that are daily being found for it.

The process of manufacture is intensely interesting, more especially from the fact that as the industry is constantly entering upon novel phases, new methods of treatment and special machinery have to be devised. One of its special uses is for wall-plaster. This is a new application which will have a distinct effect in modifying the practice of indoor plastering. Instead of the ordinary tedious and elaborate preparation of studs and strips, and the use of inferior and dust-creating mortar, with its after-scoring, which is necessary to give cohesion to the final coat of plaster-of-Paris, a single coating of the asbestos is laid on. It has a glossy surface that will not crack, as, while firm, it is perfectly flexible. It can be put on the raw brick; and a room of which the walls have been built in the morning can, before night, have a smoothly finished interior surface, shining like glass and hard as a rock. A kindred application of asbestos is now coming into vogue in the shape of unflammable decorations for walls and ceilings. These are used a great deal for the saloons of steamships. They are embossed in very beautiful designs, and can be treated with gold, varnish, lacquers or any other substance, for the enhancement of their ornamental effect.

Firemen clad in asbestos clothing and masks, as are those of London and Paris, can walk through the hottest flame with comparative impunity. Asbestos fireproof curtains have reduced the mortality of theatre fires in a very appreciable degree. In torpedoes, the difficulty of dealing with the charges of wet gun-cotton is overcome by enclosing them in asbestos, the employment of which has also, in a great measure, brought the dynamite shell to its present efficiency. Asbestos is made into a cloth available for aeronautical purposes. A balloon made of this unflammable material escapes one of the most terrible dangers to which an ordinarily constructed balloon is liable. Probably one of the first applications of asbestos in this country was to roofing. To buildings covered with this material, the shower of sparks from a neighboring conflagration involves no danger. The fact that woodwork can, by its use, be made unflammable has come to be an important factor in the insurance of buildings. One of the largest branches of asbestos manufacture is that of sectional cylinders for pipe-coverings, for retaining the heat of steam and other pipes, felt protective coverings for boilers, frost-proof protections for gas or water pipes, and cement felting, which can be laid on with a trowel, for the covering of steam-pipes, boilers or stills. In some of these cases, where it is only necessary to retain the heat, the asbestos is mixed with other substances; but where the protection must be fireproof as well, only asbestos is used. The utility of such covering is well illustrated in the heating system of railway-cars. The main pipe from which the individual cars draw their respective heat-supplies by side mains, if not covered with asbestos, would lose a large proportion of its caloric from the rapid motion of the car through the air. An interesting innovation in this class of manufacture is asbestos-sponge. It is not generally known that sponge has great powers of fire-resistance. The discovery was made accidentally not long ago, and the result was that a consignment of scraps of sponge picked up on the Southern coasts was ordered for experimental purposes. The sponge was finely comminuted and mixed intimately with asbestos fibre. The combination was found so successful for any covering which had to be fireproof as well as heat-proof that the material has become standard. Being full of air-cells, it necessarily makes an excellent non-conductor. Another very extensive department in asbestos manufacture is that of packings. Of these there are an infinite number of forms. In these days of high pressures and ocean

records, it is of supreme importance to marine engineers that they should have jointing and packing materials on which absolute reliance can be placed. In order to meet modern exigencies every possible form of packing has been constructed, particularly with asbestos and metallic wire and with asbestos and rubber cores for gland packing. The making of asbestos paper varies from the building-up of the thickest millboard to the production of a writing-paper which, from its indestructibility, is invaluable in case of fire for preserving charters, policies, agreements and other important documents.

To the electrical engineer asbestos is absolutely indispensable. Many parts of electrical devices and machinery, and wires through which the electric current passes become heated, and were it not for the electrical insulation and heat-resisting qualities which asbestos possesses, the apparatus would be completely destroyed, particularly in the case known to electricians as "short-circuiting." For such purposes it has been found advisable to combine asbestos with rubber and other gums, and this combination is now used universally for not only electrical but also steam and mechanical purposes.

A considerable part of an asbestos factory is devoted to weaving, the asbestos being first drawn into thread for that purpose. Here again is an apparently endless diversity. There is the fireplace curtain-blower, which, with an automatic spring-roller attachment, takes the place in the frame of the fireplace of the less sightly sheet-iron blower; and filtering cloths for many purposes, from straining molten metal to clarifying saccharine juices in beet-root-sugar refineries. A cloth is made for straining and filtering acids and alkalies in chemical laboratories: this is especially useful when the liquid to be treated is of a caustic or strongly acid nature. The filter can be thrown in the fire, and after the residual matter has been consumed, the web is as good as new. For filtering purposes generally, asbestos has a unique adaptability, and in tropical countries it is held in grateful estimation as a cooler and purifier of water. The newest departure in the asbestos field is the construction of electrothermic apparatus. The heating effect of the electric current is utilized by embedding the wire in an asbestos sheet or pad. The pad is used by physicians and nurses for maintaining artificial heat in local applications, and is said to be already largely used in hospitals. Another application of the same principle is to car-heaters: a sheet of asbestos, with the embedded wires, is clamped between two thin steel plates, and the portable heater thus provided, or a series if need be, is connected to the car circuit quickly and easily. It gives an even and healthy heat and can be so regulated as not to overheat the car. — *George Heli Guy in the N. Y. Evening Post.*



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

R. C. CATHEDRAL OF ST. LOUIS, NEW ORLEANS, LA.

[Gelatin Print, issued with the International and Imperial Editions only.]

WHEN we had this negative made, we were under the impression that the building stood in its original condition, that is as the building was rebuilt in 1794, but, as appears by the letter published elsewhere in this issue, the façade was remodelled about the middle of this century at the expense of Madame Montalba.

R. C. CATHEDRAL OF SS. PETER AND PAUL, PHILADELPHIA, PA.
MR. N. LE BRUN, ARCHITECT, NEW YORK, N. Y.

A VIEW of this building was published in our issue for April 25, '95, but, owing to the presence of heavy foliage, the standpoint had to be such that the great dome was wholly obscured by the pediment of the porch. For this reason we are all the more pleased to be able to publish this excellent measured drawing, prepared by Mr. H. M. Wirsing, a pupil in the Architectural Department of the Drexel Institute of Art, Science and Industry.

HOUSE OF W. B. BOURN, ESQ., SAN FRANCISCO, CAL. MR. WILLIS POLK, ARCHITECT, SAN FRANCISCO, CAL.

The house will be faced with dark-blue clinker bricks, extremely rough, while the corners will be of red stock brick. The cornices, mouldings and ornamentation will be of brown sandstone that was brought here from England as ballast. The sandstone is of a peculiar grade of fineness and firmness, the same, in fact, of which Melrose Abbey was constructed 500 years ago. The roof tiles will be of the same dark-blue color as the body bricks. This is the first residence in San Francisco to be designed with the English basement plan. The main entrance being in this basement, it opens on each side into reception-rooms. At the end of the basement corridor is the grand staircase, with large windows on the landing. The balance of the basement is devoted to kitchen, servants' hall, laundry, pantry, storerooms, furnace-rooms, etc. The entire front of the main floor is a grand *salon*, a room 25 x 46 feet. There is also a large hallway on this floor, a dining-hall, library, conservatory, dining-room and pantry. The dining-room, library, conservatory and

salon look out upon a large private garden. On the second floor are the bedchambers — five of them — each of which has connecting dressing and toilet rooms. There will be a handsomely treated hall-way running the entire length of the second floor, upon which the chambers open. This will be finished in groined vaults or intersecting arches. In the attic are two guests' chambers and five servants' rooms.

SKETCH FOR A SUBURBAN RESIDENCE. MR. ISAAC S. TAYLOR, ARCHITECT, ST. LOUIS, MO.

A DESIGN SUBMITTED, UNSUCCESSFULLY, IN THE COMPETITION FOR THE INDIANA BANK BUILDING, INDIANAPOLIS, IND. MESSRS. MARSH, ISRAELS & HARDER, ARCHITECTS, NEW YORK, N. Y.

[The following named illustrations may be found by reference to our advertising pages.]

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. XXIV: THE PARTERRE: PARK OF THE PALACE OF FONTAINEBLEAU.

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. XXV: LA COUR D'ULYSSE: PARK OF THE PALACE OF FONTAINEBLEAU.

A GROUP OF WROUGHT-IRON FENCES.

[Additional Illustrations in the International Edition.]

PORTRAIT OF THE MUSÉE PLANTIN-MORETUS, ANTWERP, BELGIUM. [Copper-plate Etching.]

ADDITION TO THE HOTEL SAVOY, LONDON, ENG. MR. T. E. COLLCUTT, ARCHITECT.

This plate is copied from the *Builder*.

DOORWAY, NO. 36 AVENUE HENRI-MARTIN, PARIS, FRANCE. M. CH. GIRAULT, ARCHITECT.

STAIRCASE AND ELEVATOR IN THE SAME HOUSE.

This, as well as the companion illustration, is copied from *L'Architecture*.

THE HALL OF THE DRAPERS' COMPANY, LONDON, ENG.

THE buildings of this Company, says *Building News*, are in the very heart of the City, close to the Bank of England in Throgmorton St., and the unique character of the premises is largely due to the small garden, with its mulberry trees, adjoining the offices, giving the name to the famous centre of the stock-broking community known as Drapers' Gardens. The Great Fire of London stopped at Drapers' Hall; but the buildings, once the Earl of Essex's historic mansion, were entirely consumed. Jarman was the architect for the rebuilding, but another fire nearly destroyed the hall in 1774, soon after which the brothers Adam were engaged in its re-construction and repair. In this condition the buildings remained till rather more than twenty years ago, when Mr. Herbert Williams, the architect to the Drapers' Company, designed the present hall and adjacent drawing-rooms and other buildings, which are executed externally in Portland stone, and are treated in a sumptuous style in accord with the magnificence of the hall herewith reproduced after the *Building News*. A handsome winding staircase, enlivened by colored marbles and decorated by statues of Edward III and Philippa, leads to the reception-rooms and hall. The quadrangle and cloister round which the buildings are grouped make a special and pleasing feature with the tubs of laurel-trees which adorn the little quad. Over the arcades are sculptured representations of allegorical figures and groups by Mr. E. W. Wyon. The site of the buildings is that of a mansion belonging, as already stated, to Thomas Cromwell, Earl of Essex in the reign of Henry VIII. This house figured in Aggas's plan with four embattled turrets, and from thence the open country up towards Hampstead and Highgate could clearly be viewed and commanded by Cromwell, "Mayster of the King's Jewel-house." Upon his attainder, the property was purchased by the Drapers, and made their "common hall." Previously the Guild were housed in St. Swithin's Lane. The first charter of their incorporation dates from 1364, granted by Edward III, and in 1439 Henry VI conferred a fresh charter of more considerable privileges, as the Guild or fraternity of the Blessed Mary, the Virgin of the Mystery of Drapers. A ladies' chamber, always and still a feature with the Drapers' Company, was used solely by the sisters of the confraternity. Married ladies only dined in the hall, "a chekker chamber being for maydens" specially reserved. In 1515, a ladies' feast was held, including "brawn and mustard, capon boiled, swan roasted, pike, venison baked and roast, jellies, pastry, quails, sturgeon, salmon, and wafers and ipocras." The splendid feasts of the Drapers' Company have always been foremost in splendor, and the dignified clergy and conventual brothers usually figured among their guests, and, of course, the Lord Mayors, who often started their processions from the hall of the Drapers' Company. It is claimed that Henry Fitz-Alwyn, the first Lord Mayor of London (who was elected in 1191 and held office for twenty-five years), belonged to the Guild of Drapers. Stow and

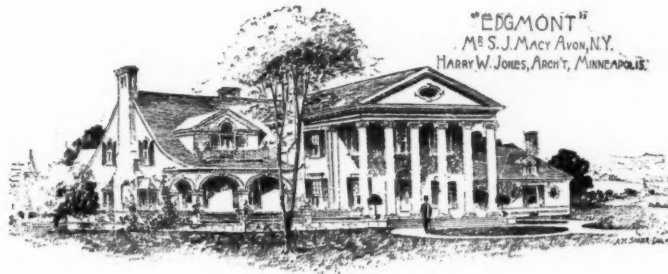
other writers say he was a Goldsmith. The Drapers' Company have many works of charity, and hold vast estates. Several females are free of the Company, and participate in its benefactions. Almost every modern educational movement has been aided by the Drapers' Company in nearly every trade. The charities of the Drapers' include Queen Elizabeth's College at Greenwich, several almshouses at Tottenham, Startford by Bow, Stepney, Mile End, Shoreditch, and Southwark, and in Surrey and Berks; the Green Coat School, the Tottenham Orphan School, and two girls' schools in Wales. Many pensions and scholarships are given by the Company.

NOTES AND CLIPPINGS

PRIVATE STREETS. — New York is peculiarly free from one annoyance that abounds in many other cities, namely, the private street. There is only one thoroughfare of any prominence which is private property in this city, and that is Thomas Street, which is part of the old New York Hospital site. Private ownership in it is still legally retained by stretching chains across the two entrances two or three Sundays of each year. — *New York Times*.

A WATER-INCASED PRISON CELL. — There is on exhibition in Boston a model of a cell for prisoners, from which a prisoner would find it practically impossible to attempt to escape without giving an alarm that would bring a guard rushing up to his door before either the lock on the door or the steel tubes of which the cell is composed were broken or even cracked. The protection is not afforded by electricity, although electricity plays a part in the device. The chief protective agent is water, which fills every length and every joint in the steel tubes forming the entire cell. The water is maintained in the tubes at a certain pressure, indicated on a gauge in the watchman's room, and the slightest decrease in pressure of this water, such as would be made by the cracking of a tube, so that no more than a cubic inch of water would escape, would release the pointer on the gauge, allowing it to turn slightly and thus make an electric connection with an electric bell. The bell then rings continuously until the circuit is broken by the watchman. At the same time that the bell rings on the annunciator, above is shown the number of the cell where the water is escaping from the tube. Unlike the modern cells that are made with solid steel bars, the floors and ceiling do not have to be made of steel plates — through which the criminal can often cut his way, or on which his movements in the cell keep up a continuous noise sufficient to make the cell-room too noisy for the watchman to hear the slight sound of a saw or an auger in a particular cell. This new cell is a cage. The sides, floor, ceiling and door are all made of steel tubes, set so closely together that they could not be sprung apart to any advantage. Even the hinges and the bolt on the door are filled with water, always ready to give the alarm if its pressure is changed in the slightest degree, yet inclosed in such a manner that the prisoner cannot make any attempt to break or cut his way out of the cell without changing the pressure. — *Philadelphia Evening News*.

AN IMPROVED DIVING-BELL. — Scientists in New South Wales are greatly interested over an invention by J. Vernon Israel, of Sydney, which may revolutionize deep-sea diving. On the 10th of June the diving-bell was tested in Sydney Harbor. Captain Bell, the United States Consul, who witnessed the test, says: "I arrived by invitation, in company with a number of scientists, off Bradley's Head. We had a number of boulders on board to test the diving-bell. The machine was floating at the side of a schooner. It looked a good deal like a street-roller. On our arrival the three tons of steel were hoisted up by the tackle of the schooner. The owners, Dr. Barrington and J. Israel, then invited us to throw our boulders overboard. This we did, and then examined the machine, which is not bell-shaped, but constructed on a different plan entirely. It is a cylinder 7' 4" in length, and of the same diameter. It is built of steel three-eighths of an inch thick. Inside this is a second cylinder of similar strength, but of lesser diameter by ten inches. The space between the inner and outer shell is used for filling with water to sink the machine, thirty-two gallons being sufficient, and for buoyancy when air displaces the water. The two men entered through a manhole on the top, and the cylinder was hermetically sealed. The order was then given to let go. So well adjusted was the cylinder that Dr. Barrington and his companion sported about on the waves for a while until they wanted to sink, when they opened a valve and the water rushed in, filling the space around the inner cylinder, and down they went until the register card indicated nearly twenty fathoms. We were all more or less frightened, and began pumping air to them at a furious rate, when a voice from the depths of the ocean sounded in our ears. It came from the telephone attachment of the machine. 'Too much air; do let up; you are creating such a current that we can't light a match to have a smoke.' In fact, the owners can sleep, eat and smoke while enjoying the wonders of the deep at 1,000 fathoms below the surface, if desired. Inside the compartment there is driving gear for working the motive wheels of the machine and the steering gear. For salvage work there are 'grabbers,' or pronged shovels, to be revolved to scoop up pearl shells and toss them into a receiver, which in its turn has to discharge into the inner spaces of the cylinder, to be finally handled by the divers and packed in the inner compartment. If the air-pump ceases to operate, the occupants of the cylinder have a supply on hand in chambers to last them for an hour, and should their schooner get adrift, they can float to the surface by emptying their water ballast and ride the billows like a life-boat. The diving machine is to be taken to Torres Straits, off the New Guinea coast, and will be employed in bringing long-buried treasures from the bed of the sea. — *San Francisco Chronicle*.



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A NEW SHADE IN

CABOT'S CREOSOTE SHINGLE STAIN.

A Soft, rock-gray with a delicate greenish cast which gives admirably the color effect of a lichen-grown boulder.

A particularly appropriate and harmonious tone for country houses. It is known as

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SAMPLES ON APPLICATION.

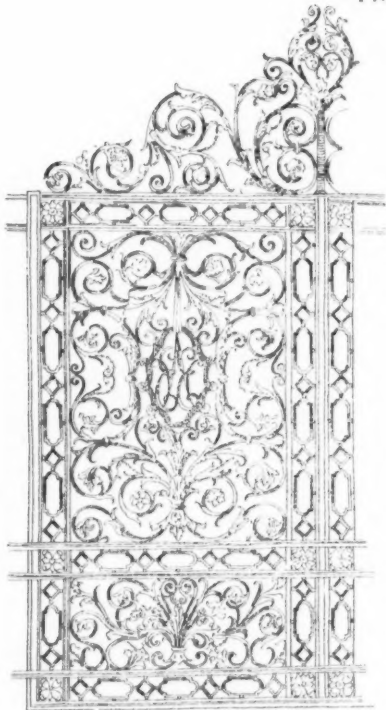
SAMUEL CABOT, Sole Manufacturer,

BOSTON, MASS.

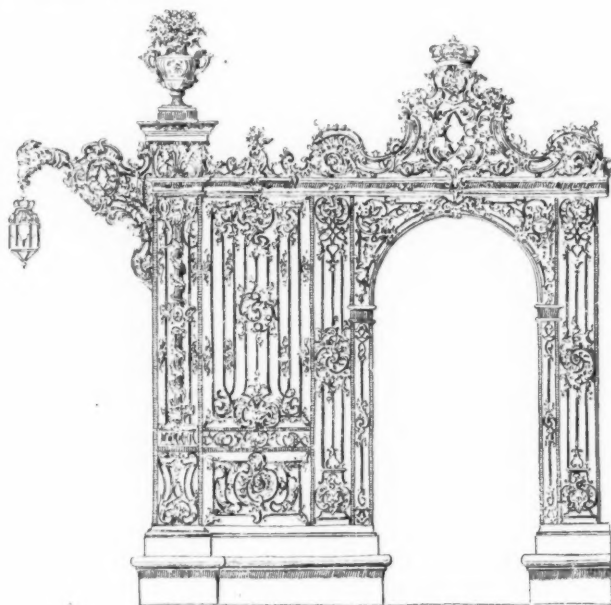
Agents at all Central Points.



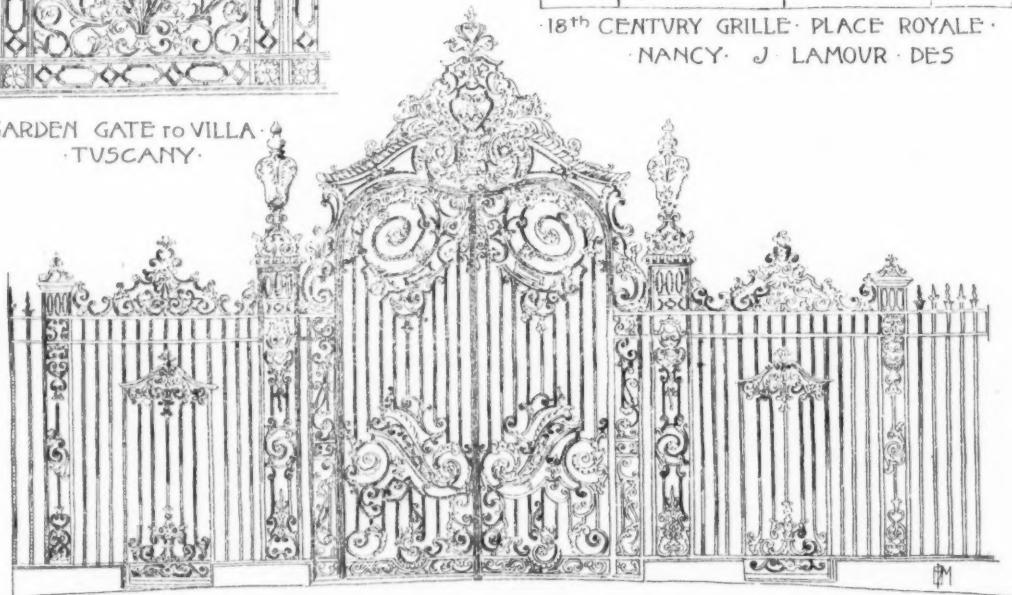
· GATE TO VILLA STRECCIVS · LANDAU · PRUSSIA ·
· PROF · S · LEVY · ARCHT ·



· GARDEN GATE TO VILLA ·
· TUSCANY ·



· 18th CENTURY GRILLE · PLACE ROYALE ·
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WROUGHT-IRON FENCES.

POTSDAM RED SANDSTONE

IN THE CHOICE of a building stone, its beauty and the artistic effect which can be secured by its use often seems to be the only motive influencing its selection. Whether the stone will endure without change, whether it will stain, become covered with green or gray efflorescence, decay or crumble, and whether iron will discolor the building in streaks and blotches until it becomes unsightly and grotesque,—all these questions are sometimes overlooked, with a result that can be foreseen. . . .

THEN the matter of the strength of the stone selected is often deemed of slight consequence, and broken lintels and sills, cracked steps and platforms after a short time show that this also is a matter which should be considered. . . .

WHEN fine mouldings and carvings rapidly lose their sharp arrises, and a process of scaling off and washing away destroys the effect which was given when the work was new, changes the appearance of the building, and makes it a question whether it was worth while to incur the expense of the work,—then, if not before, the question of durability receives some attention. . . .

**A BUILDING STONE SHOULD BE BEAUTIFUL, STRONG AND
ABSOLUTELY DURABLE.**

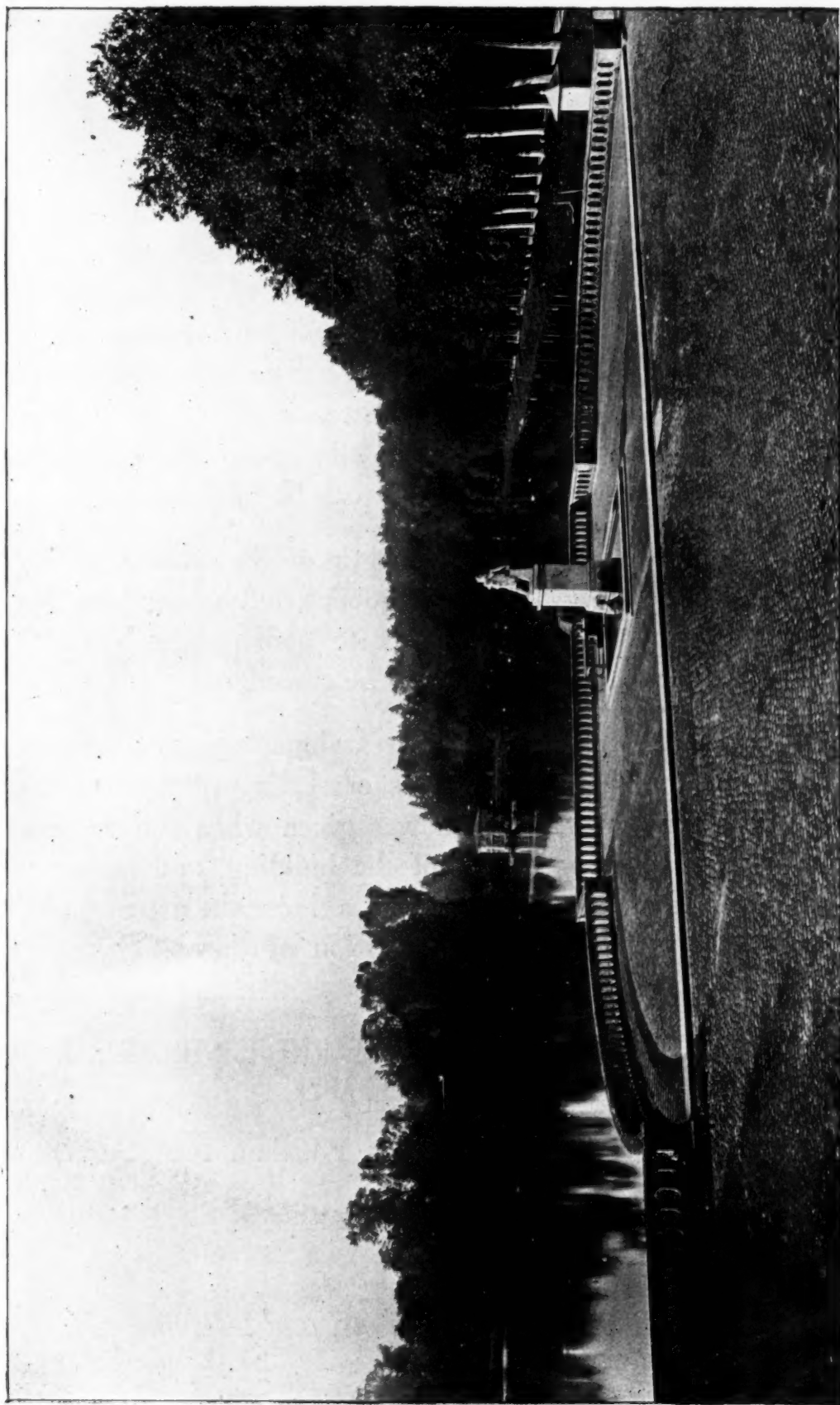
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ACCESSORIES OF LANDSCAPE ARCHITECTURE. No. XXV.



LA COUR D'ULYSSE: PARK OF THE PALACE OF FONTAINEBLEAU.



THE HELIOTYPE PRINTING CO., BOSTON

CATHEDRAL OF ST. LOUIS, NEW ORLEANS, LA.



From L'Architecture.

MAISON AVENUE HENRI-MARTIN, 36, A PARIS. Départ de l'escalier et ascenseur. — ARCHITECTE : M. CH. GIRAULT.

WILLIAMS PRINTING CO. NEW YORK

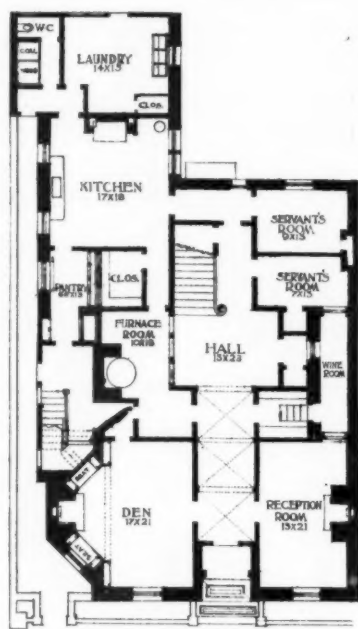




From the Builder.

HELLOTT'S PICTURE CO. BOSTON

ADDITIONS TO SAVOY HOTEL.—MR. T. E. COLLICUTT, F.R.I.B.A., ARCHITECT.



PLAN OF BASEMENT



PLAN OF PRINCIPAL FLOOR

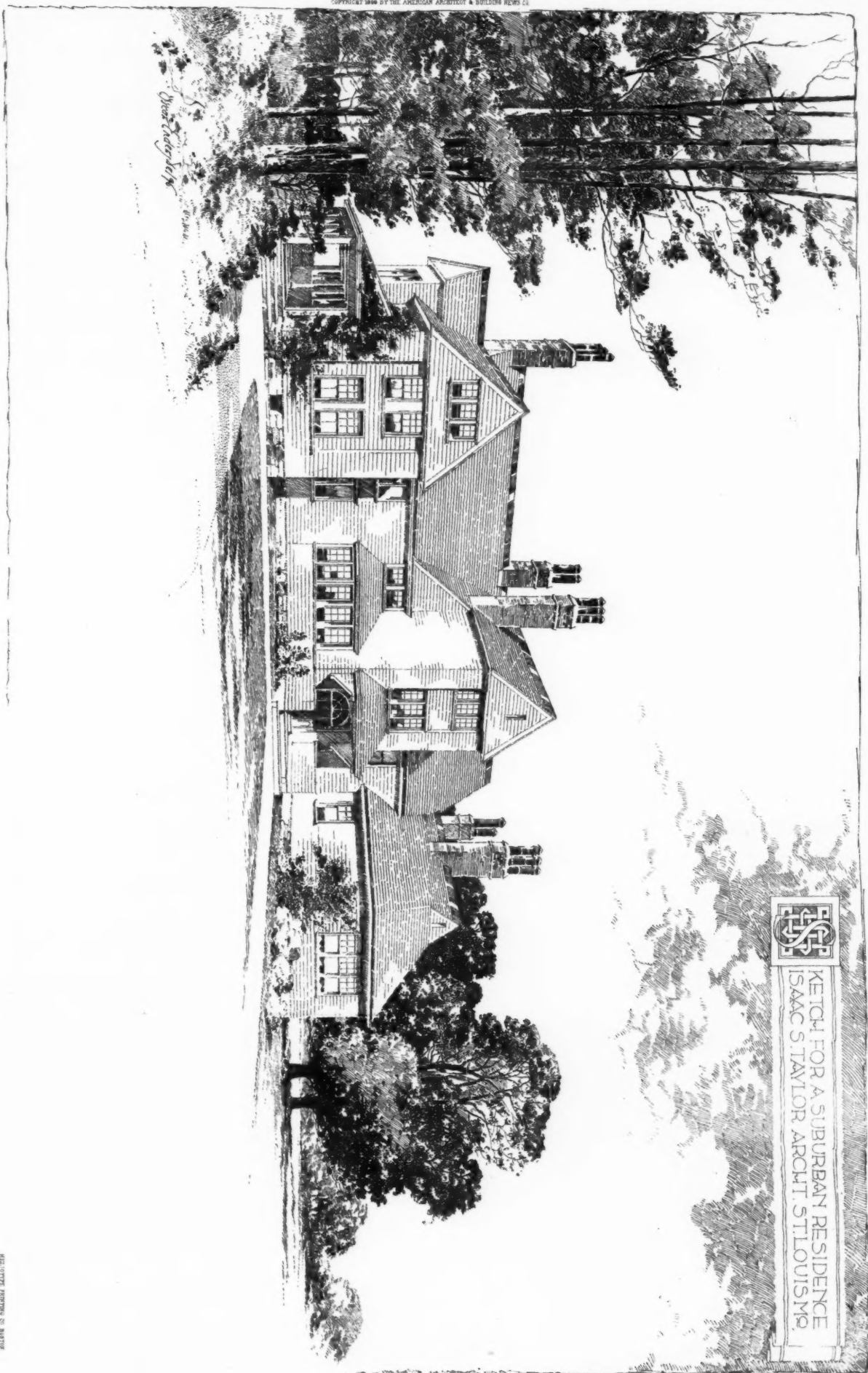


PLAN OF SECOND FLOOR

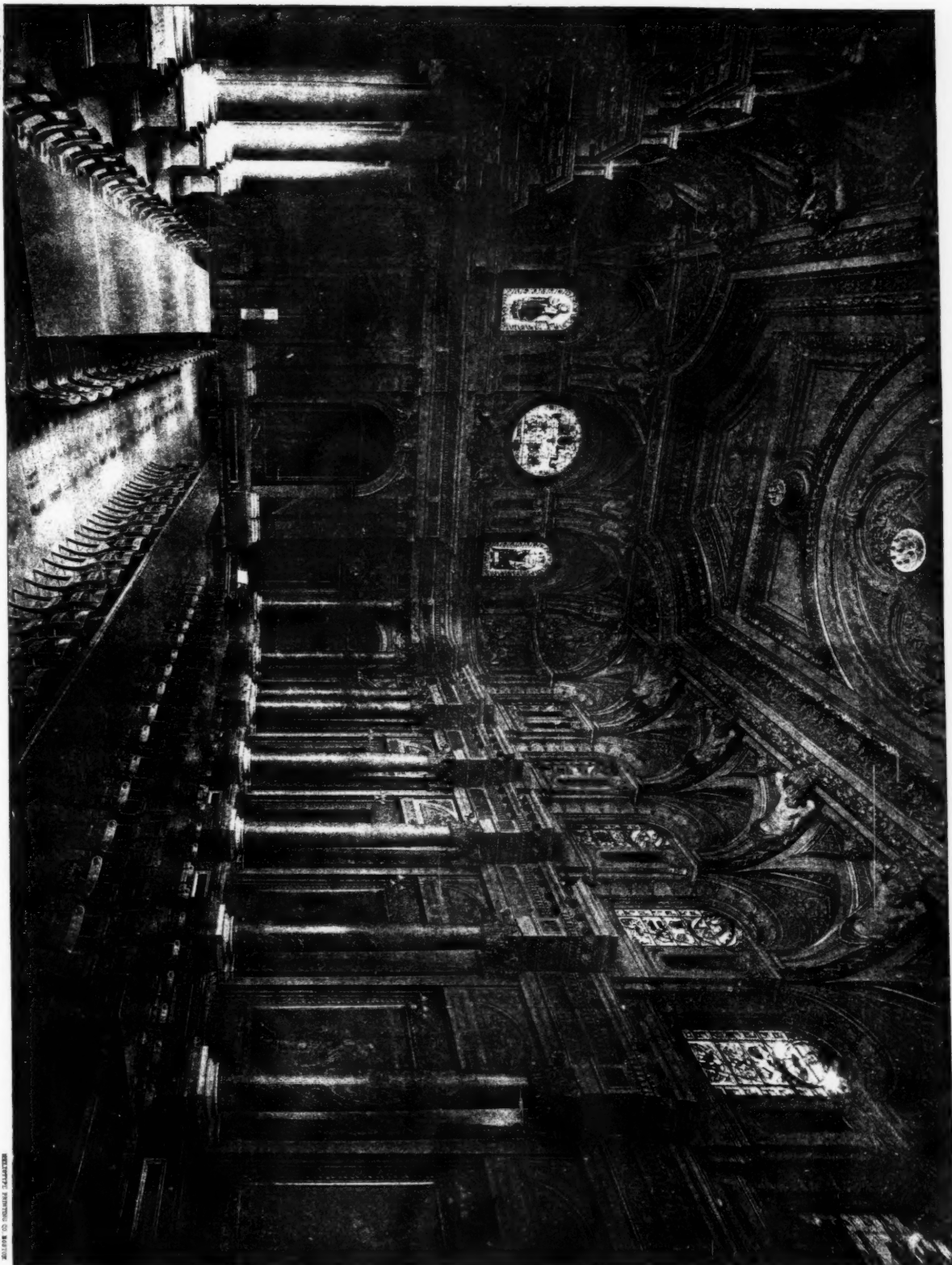


Lines of Residence at San Francisco for W.B. Bourn Esq.

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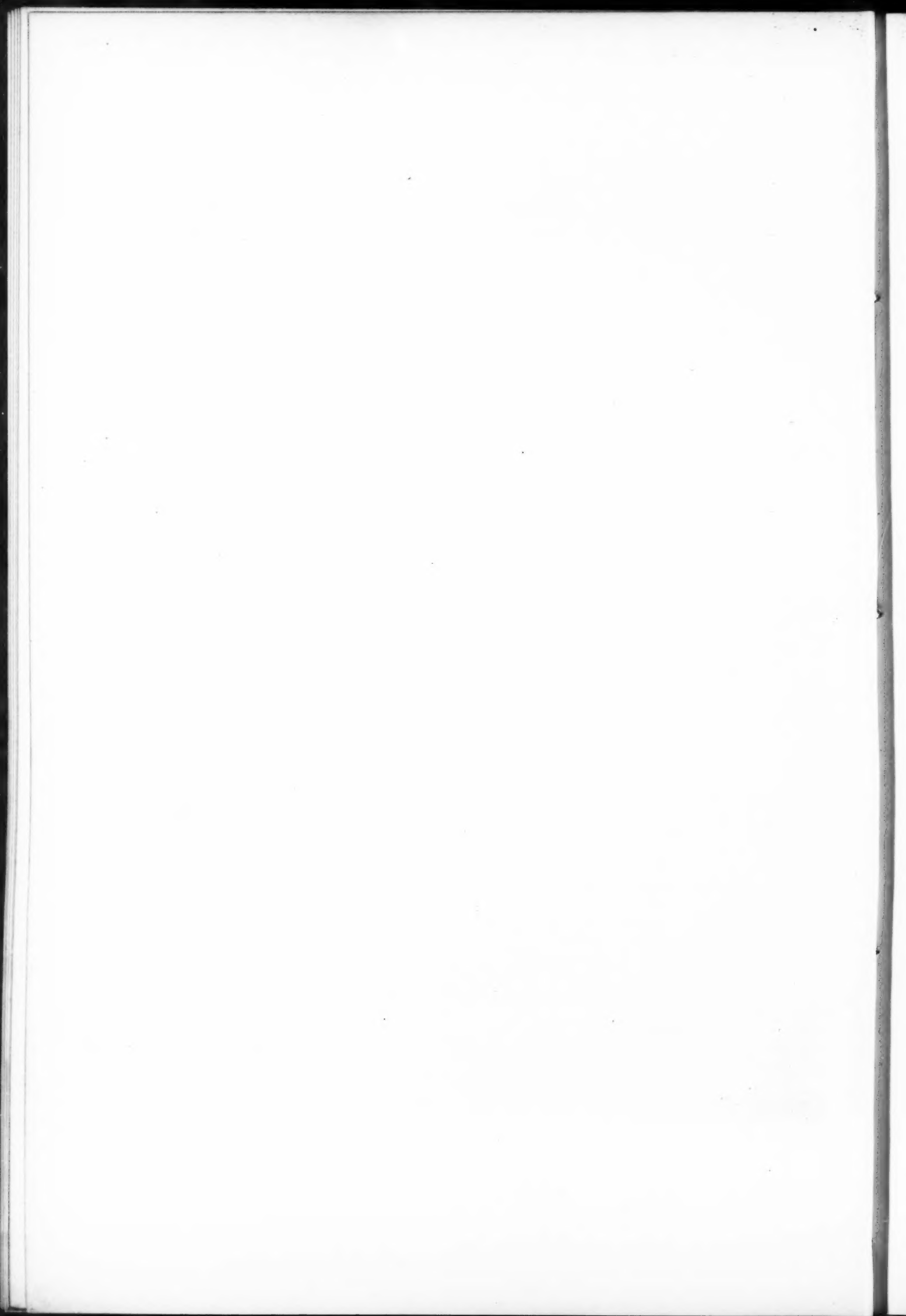


From the Building News



THE HALL OF THE DRAPERS CO. THE GREAT HALL. H. WILLIAMS ADAPT

REPRODUCED BY PERMISSION OF THE ARCHITECTS

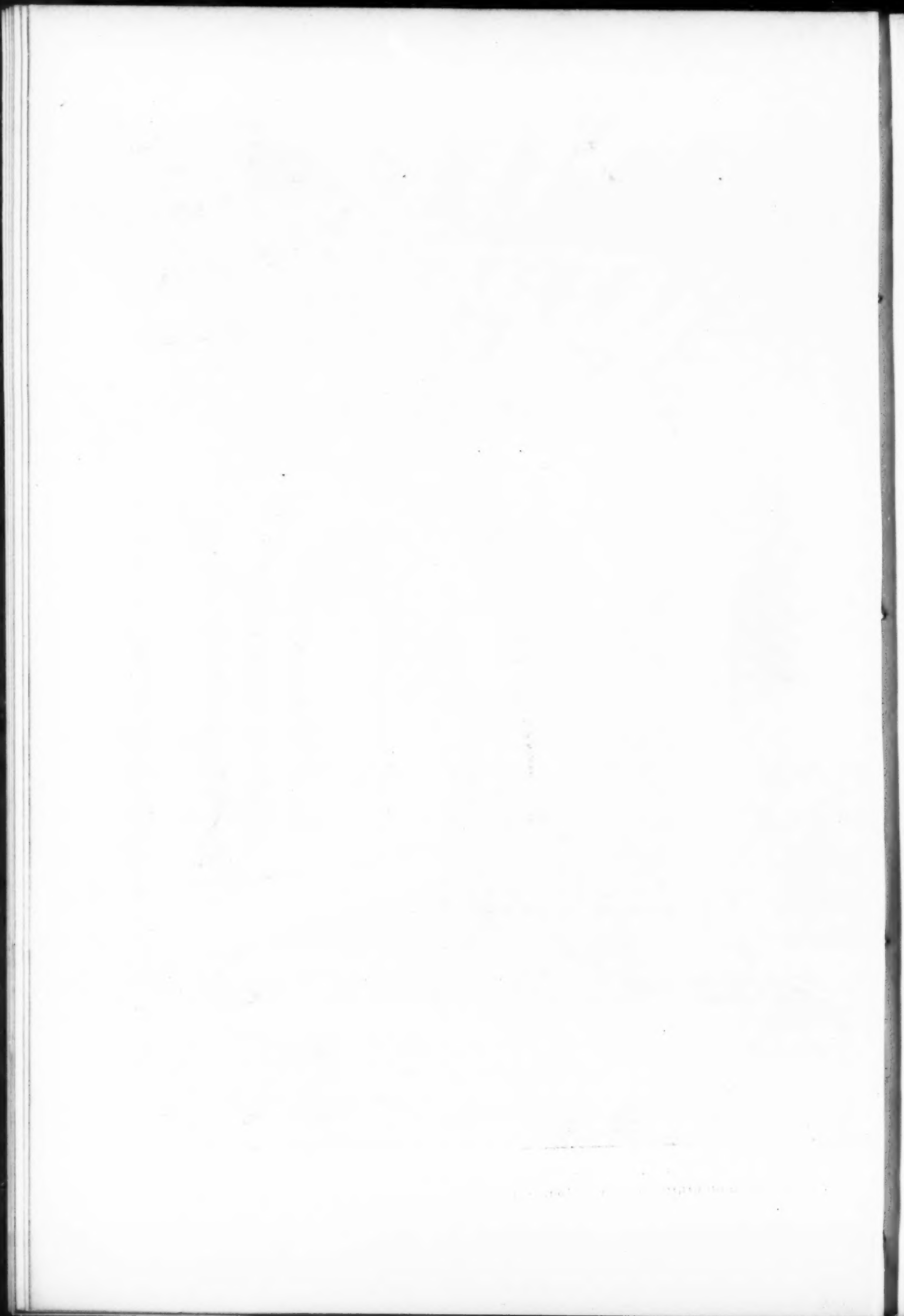




From L'Architecture

MAISON AVENUE HENRI-MARTIN, 36, A PARIS. Entrée et détail du premier étage. — ARCHITECTE : M. CH. GIRAULT.

HELIOTYPE PRINTING CO. BOSTON





LE PORTIQUE

Côté Nord de la Cour du Musée Platin-Moretus



LONGITUDINAL SECTION
ON THE AXIAL LINE (SEE PLAN)



COMPETITIVE (UNSUCCESSFUL) DESIGN FOR THE INDIANA NATIONAL

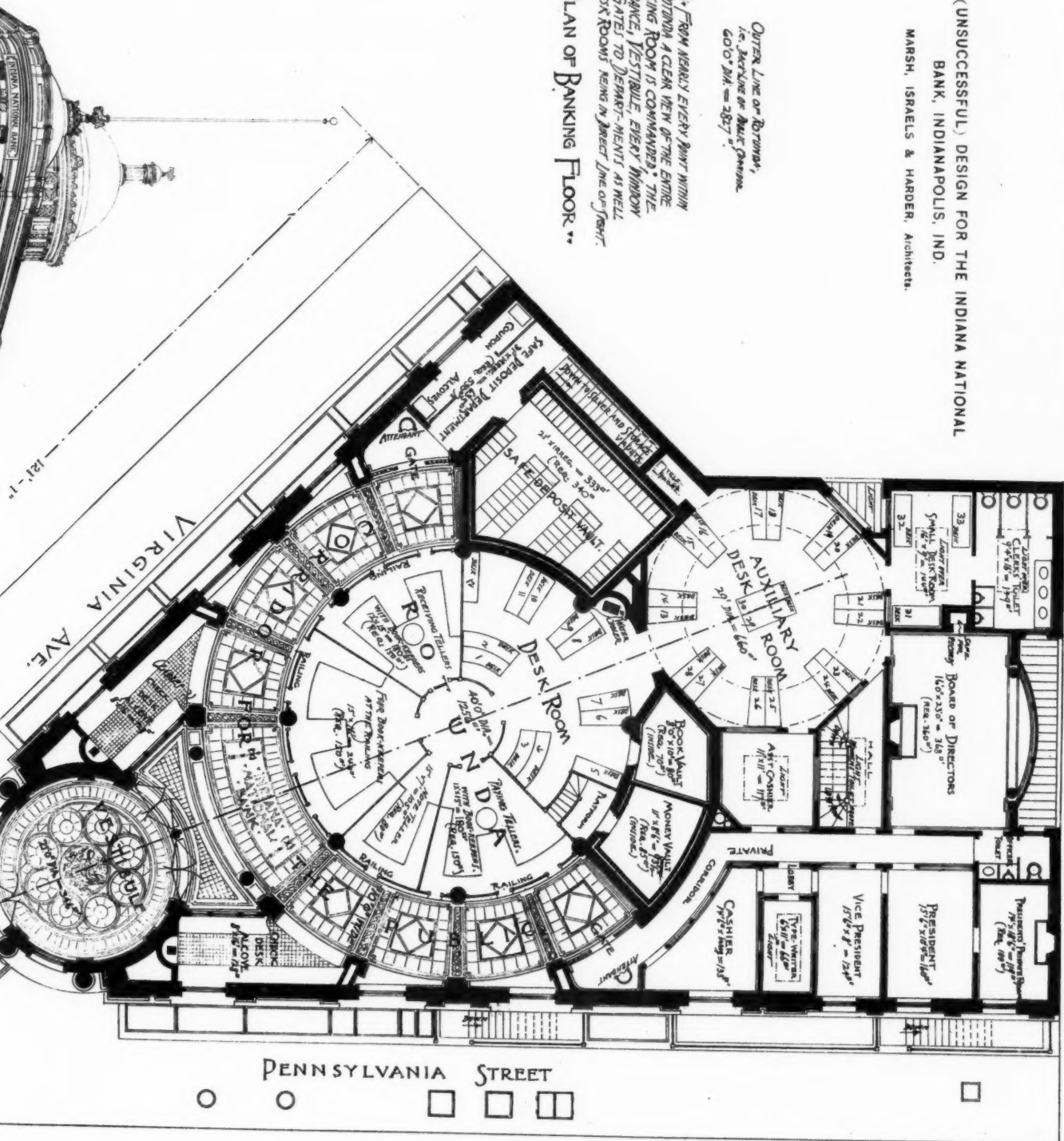
BANK, INDIANAPOLIS, IND.

MARSH, ISAELS & HARDER, Architects.

OUTER LINE OF ROTUNDA,
i.e. JACKETING OF BANK CHAMBER.
60'0" DIA. = 287'."

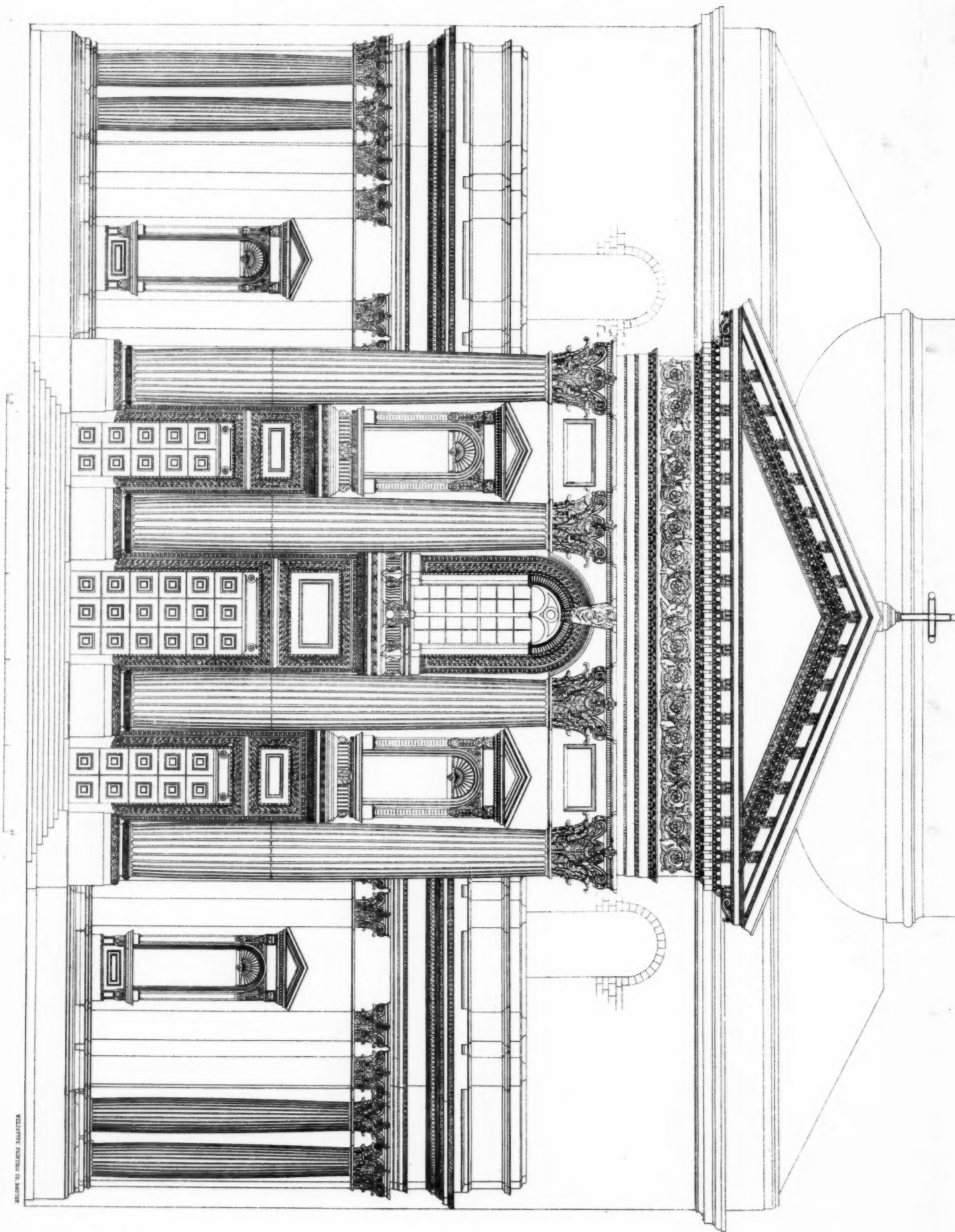
N.B.—FROM NEARLY EVERY POINT WITHIN
THE ROTUNDA A CLEAR VIEW OF THE ENTIRE
BANKING ROOM IS COMMANDED. THE
ENTRANCE, VESTIBULE, EVERY WINDOW
AND GATES TO DEPARTMENTS AS WELL
AS DESK ROOMS BEING IN DIRECT LINE OF SIGHT.

PLAN OF BANKING FLOOR.



114	President's Office
115	President's Office
116	President's Office
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148	President's Office
149	President's Office
150	President's Office

150'-11 1/2"



No. 1076.

AMERICAN ARCHITECT AND BUILDING NEWS. Aug. 5 1896.

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CATHEDRAL OF SS. PETER AND PAUL

DREXEL INSTITUTE
OF ART SCIENCE AND
INDUSTRY DEPARTMENT
OF ARCHITECTURE

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